YESTERDAY
TODAY
TOMORROW

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YESTERDAY, TODAY, TOMORROW

SELECTIONS FROM WELL-KNOWN WRITERS ON SUBJECTS OF TOPICAL INTEREST

With comments and annotations

by

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MR PEARCE has also compiled and edited the following books of selections from English literature:—

Models of High School Prose (1935)

More Models of High School Prose (1938)

Models of Prose and Verse (1938)

Models of Comparative Prose (1934) in collaboration with G. P. Aryaratna, M.A.

He has also written a 'quick survey of human history, as marked by the lives of great men and women', entitled *Footprints on the Sands of Time*, published by the Oxford University Press.

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INTRODUCTION

WHEN I was a student I used to dread the weary boredom of 'English Literature' in the form of long passages from Burke, Macaulay or Johnson, with notes or explanations by the teacher even more wearisome than the text. With what relief we hailed the first sign of modernization of our English course, when so recent an author as R. L. Stevenson was prescribed. H. G. Wells and Bernard Shaw were, of course, unthinkable for the officially approved schoolboy reading of those days: but how eagerly their works were awaited, and devoured almost in secret.

I particularly recollect having wondered with irritation: 'Why can't we read, in class, books which have a bearing on the problems of our own time? Why must we always be concerned with language rather than with thought?' It is a feeling that I have never forgotten, and the recollection of it has provided the motive and the background of each one of my own attempts to furnish suitable reading-material for students in India and Ceylon.

I would go so far as to say that we ought to modify the reading-matter of our English textbooks in accordance with the year-to-year developments in the world around us. Of course, there are, and always will remain, gems of literature whose value is unchanged whatever slumps or booms may occur in the markets of international politics, industry or exchange. I have tried to include some of the finest of those gems in my other books. In the present one, my aim has been to illustrate the development of ideas, the change of method or of outlook, from Yesterday to Today, by the juxtaposition of passages from well-known authors dealing with the same topic regarded in the light of their own times.

The limitations of space have obviously placed great restrictions upon my choice of topics, since, in order to provide extracts long enough to be both interesting and convincing, I had to confine my choice to about half-a-dozen subjects. Accordingly I have chosen those which I felt had a special bearing on the problems of our time, or a

special appeal to the students of today, my selection of topics being Education, Science, Sport, Nationalism, and War, with a concluding section on The Future. I hope there will thus be something to suit tastes of various kinds, serious and sport-loving, political and scientific, as well as literary.

As this compilation is intended for senior students of English, the notes have been restricted to the minimum which my experience of teaching Intermediate classes leads me to consider necessary, and they deal with difficult allusions and references rather than with unfamiliar words, which can be looked up in *The Pocket Oxford Dictionary* or *The Basic Dictionary*. For the same reason I have omitted from the text of this book 'Key-Questions', the device which all my previous books contained, and which has been widely welcomed by both students and teachers, especially as a help in private study. However, for the benefit of those who find the 'Key-Question' method helpful, the passages have been printed with visible gaps or asterisks between the paragraphs, so that the 'Key-Questions' provided at the end of the book may be inserted by those who find them helpful. Those who are not familiar with the method will find it explained in detail in the introduction to any of my other books, a list of which is given on the back of the title-page of this.

F. G. P.

Gwalior,
September 1941.

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SECTION 1—EDUCATION

Yesterday

THE education of 'yesterday' which has left perhaps the deepest imprint on the world of today is that which was imparted in the 'public schools' of England, at which a large proportion of the rulers and administrators of the British Commonwealth received their first training in leadership. The famous tale of *Tom Brown's Schooldays*, which describes the life of a boy at Rugby School, conveys a very good idea of what a public school was like a hundred years ago: and though there have been changes in details between that time and ours, with some modernization of curricula and ways of living, the essential atmosphere is probably much the same. It was a fairly hard training, and it produced men who were ready to take whatever life had in store for them, in the same spirit as they played football or cricket. It produced, in times of peace, men who as administrators showed the same devotion to duty, with the same lack of sensitiveness and imagination, as they showed when they were Prefects at school. They had been brought up to follow certain standards: they could not readily understand that any other standards were possible except for people who were either 'not gentlemen' or not sports. People with different ideas and ideals, if under their charge, were therefore rather likely to receive the same treatment as would have been meted out to boys at school who dared to do something that was 'not done'. On the other hand, the finest qualities of the public school tradition were likely to be brought out in times of real danger, where initiative, courage, and leadership were needed above all. In the following extracts we can see how the foundations of such qualities were laid, in howsoever rough-and-ready a manner, at a great public school.

TOM BROWN AT SCHOOL

By Thomas Hughes

From *Tom Brown's Schooldays*

'And so here's Rugby, sir, at last, and you'll be in plenty of time for dinner at the School-house, as I tell'd you,' said the old guard, pulling his horn out of its case, and tootle-tooing away ; while the coachman shook up his horses, and drove along the side of the school.

Tom's heart beat quick as he passed the great school field or close, with its noble elms, in which several games of football were going on, and tried to take in at once the long line of grey buildings, beginning with the chapel, and ending with the School-house, the residence of the headmaster. And he began already to be proud of being a Rugby boy, as he passed the school gates, and saw the boys standing there.

One of these ran out from the rest, and scrambled up behind ; where, having righted himself, and nodded to the guard, with 'How do, Jem ?' he turned short round to Tom, and, after looking him over for a minute, began—

'I say, you fellow, is your name Brown ?'

'Yes,' said Tom, in considerable astonishment ; glad, however, to have lighted on someone already who seemed to know him.

'Ah, I thought so : you know my old aunt, Miss East, she lives somewhere down your way in Berkshire. She wrote to me that you were coming today, and asked me to give you a lift.'

East was great in the character of a guide; he carried Tom through the great gates into the quadrangle, and began showing him the school and examining him as to his literary attainments; the result of which was a prophecy that they would be in the same form, and could do their lessons together.

As soon as dinner was over, and Tom had been questioned by such of his neighbours as were curious as to his birth, parentage, education, and other like matters, East proposed having a look at the close, which Tom, athirst for knowledge, gladly assented to, and they went out through the quadrangle, and past the big fives court, into the great playground.

'That's the chapel you see,' said East, 'and there, just behind it, is the place for fights; you see it's most out of the way of the masters, who live on the other side and don't come by here after first lesson or callings-over. All this part where we are is the little-side ground, right up to the trees, and on the other side of the trees is the big-side ground, where the great matches are played. I say, it's horrid cold, let's have a run across,' and away he went.

* * *

Tom followed him across the level ground till they came to a sort of gigantic gallows of two poles eighteen feet high, fixed upright in the ground some fourteen feet apart, with a cross-bar running from one to the other at the height of ten feet or thereabouts.

'This is one of the goals,' said East, 'and you see the other, across there, right opposite, under the Doctor's wall. Well, the match is for the best of three goals; whichever side kicks two goals wins: and it won't do, you see, just to kick the ball through these posts, it must go over the cross-bar; any height'll do,

so long as it's between the posts. You'll have to stay in goal to touch the ball when it rolls behind the posts, because if the other side touch it they have a try at goal. Then we fellows in quarters, we play just about in front of goal here, and have to turn the ball and kick it back before the big fellows on the other side can follow it up. And in front of us all the big fellows play, and that's where the scrummages are mostly.'

Next minute East cried out, 'Hurra! here's the punt-about—come along and try your hand at a kick.' The punt-about is the practice-ball, which is just brought out and kicked about anyhow from one boy to another before callings-over and dinner, and at other off times.

Presently more boys and bigger came out, and boys from other houses on their way to calling-over, and more balls were sent for. The crowd thickened as three o'clock approached; and when the hour struck, the master of the week came down in cap and gown to calling-over, and the whole school of three hundred boys swept into the big school to answer to their names.

The master mounted into the high desk by the door, and one of the praepostors of the week stood by him on the steps, the other three marching up and down the middle of the school with their canes, calling out 'Silence! silence!'. The sixth form stood close by the door on the left, some thirty in number, mostly great big grown men, as Tom thought, surveying them from a distance with awe. The fifth form behind them, twice their number and not quite so big. These on the left; and on the right the lower fifth, shell, and all the junior forms in order; while up the

middle marched the three praepostors.

The master of the week being short-sighted, and the praepostors of the week small and not well up to their work, the lower-school boys employ the ten minutes which elapse before their names are called in pelting one another vigorously with acorns, which fly about in all directions. The small praepostors dash in every now and then, and generally chastise some quiet, timid boy who is equally afraid of acorns and canes, while the principal performers get dexterously out of the way; and so calling-over rolls on somehow, much like the big world, punishments lighting on wrong shoulders, and matters going generally in a queer, cross-grained way but the end coming somehow, which is after all the great point.

Then the praepostor who stands by the master calls out the names, beginning with the sixth form, and as he calls, each boy answers 'Here' to his name, and walks out. Some of the sixth stop at the door to turn the whole string of boys into the close; it is a great match day, and every boy in the school, will-he, nill-he, must be there.

Today, however, being the School-house match, none of the School-house praepostors stay by the door to watch for truants of their side; there is *carte blanche* to the School-house fags to go where they like: 'They trust to our honour,' as East proudly informs Tom; 'they know very well that no School-house boy would cut the match. If he did, we'd very soon cut him, I can tell you.'

'Hold the punt-about!' 'To the goals!' are the cries, and all stray balls are impounded by the authorities; and the whole mass of boys moves up towards the two goals, dividing as they go into three bodies.

That little band on the left, consisting of from fifteen to twenty boys, Tom amongst them, who are making for the goal under the School-house wall, are the School-house boys who are not to play-up, and have to stay in goal. The larger body moving to the island goal are the School boys in a like predicament. The great mass in the middle are the players-up, both sides mingled together; they are hanging their jackets, and all who mean real work their hats, waist-coats, neck-handkerchiefs, and braces, on the railings round the small trees.

*   *   *

[The match is over: the School-house, having won, has been celebrating its victory with songs, speeches, toasts, and plenty of noise.]

The quarter to ten struck, and the prayer-bell rang. The steps of the head porter are heard on the stairs, and a light gleams at the door. 'Hush!' from the fifth form boys who stand there, and then in strides the Doctor, cap on head, book in one hand, and gathering up his gown in the other. He walks up the middle, and takes his post by Warner, who begins calling over the names. The Doctor takes no notice of anything, but quietly turns over his book and finds the place, and then stands cap in hand and finger in book, looking straight before his nose. He knows better than anyone when to look, and when to see nothing; tonight is singing night, and there's been lots of noise and no harm done; nothing but beer drunk, and nobody the worse for it; though some of them do look hot and excited. So the Doctor sees nothing,

but fascinates Tom as he stands there, and reads out the Psalm in that deep, ringing, searching voice of his. Prayers are over, and Tom still stares open-mouthed after the Doctor's retiring figure, when he feels a pull at his sleeve, and turning round, sees East.

'I say, were you ever tossed in a blanket?'

'No,' said Tom; 'why?'

''Cause there'll be tossing tonight, most likely, before the sixth come up to bed. So if you funk, you just come along and hide, or else they'll catch you and toss you.'

'Were you ever tossed? Does it hurt?' inquired Tom.

'Oh yes, bless you, a dozen times,' said East, as he hobbled along by Tom's side upstairs. 'It doesn't hurt unless you fall on the floor. But most fellows don't like it.'

They stopped at the fireplace in the top passage, where were a crowd of small boys whispering together, and evidently unwilling to go up into the bedrooms. In a minute, however, a study door opened, and a sixth-form boy came out, and off they all scuttled up the stairs, and then noiselessly dispersed to their different rooms. Tom's heart beat rather quick as he and East reached their room, but he had made up his mind. 'I shan't hide, East,' said he.

'Very well, old fellow,' replied East, evidently pleased; 'no more shall I—they'll be here for us directly.'

The room was a great big one with a dozen beds in it, but not a boy that Tom could see, except East and himself. East pulled off his coat and waistcoat,

and then sat on the bottom of his bed, whistling, and pulling off his boots ; Tom followed his example.

A noise and steps are heard in the passage, the door opens, and in rush four or five great fifth-form boys, headed by Flashman in his glory.

Tom and East slept in the further corner of the room, and were not seen at first.

'Gone to ground, eh ?' roared Flashman ; 'push 'em out then, boys ; look under the beds ; and he pulled up the little white curtain of the one nearest him. 'Who-o-op,' he roared, pulling away at the leg of a small boy, who held on tight to the leg of the bed and sung out lustily for mercy.

'Here, lend a hand, one of you, and help me pull out this young howling brute. Hold your tongue, sir, or I'll kill you.'

'Oh, please, Flashman, please, Walker, don't toss me ! I'll fag for you, I'll do anything, only don't toss me.'

'You be hanged,' said Flashman, lugging the wretched boy along, ''twon't hurt you,—you ! Come along, boys, here he is.'

'I say, Flashey,' sung out another of the big boys, 'drop that ; you heard what old Pater Brooke said tonight. I'll be hanged if we'll toss anyone against his will—no more bullying. Let him go, I say.'

Flashman, with an oath and a kick, released his prey, who rushed headlong under his bed again, for fear they should change their minds, and crept along underneath the other beds, till he got under that of the sixth-form boy, which he knew they daren't disturb.

'There's plenty of youngsters don't care about it,' said Walker. 'Here, here's Scud East—you'll be

tossed, won't you, young un?' Scud was East's nickname, gained by his fleetness.

'Yes,' said East, 'only mind my foot.'

'And here's another who didn't hide. Hullo! new boy; what's your name?'

'Brown.'

'Well, Whitey Brown, you don't mind being tossed?'

'No,' said Tom, setting his teeth.

'Come along then, boys,' sung out Walker, and away they all went, carrying along Tom and East, to the intense relief of four or five other small boys, who crept out from under the beds and behind them.

'What a trump Scud is!' said one. 'They won't come back here now.'

'And that new boy, too; he must be a good plucked one.'

'Ah! wait till he has been tossed on to the floor; see how he'll like it then!'

Meantime the procession went down the passage to Number 7, the largest room, and the scene of tossing, in the middle of which was a great open space. Here they joined other parties of the bigger boys, each with a captive or two, some willing to be tossed, some sullen, and some frightened to death. At Walker's suggestion all who were afraid were let off, in honour of Pater Brooke's speech.

Then a dozen big boys seized hold of a blanket dragged from one of the beds. 'In with Scud, quick, there's no time to lose.' East was chucked into the blanket. 'Once, twice, thrice, and away!' Up he went like a shuttlecock, but not quite up to the ceiling.

'Now, boys, with a will,' cried Walker, 'once,

twice, thrice, and away!' This time he went clean up, and kept himself from touching the ceiling with his hand, and so again a third time, when he was turned out, and up went another boy. And then came Tom's turn. He lay quite still, by East's advice, and didn't dislike the 'once, twice, thrice'; but the 'away' wasn't so pleasant. They were in good wind now, and sent him slap up to the ceiling first time, against which his knees came rather sharply. But the moment's pause before descending was the rub, the feeling of utter helplessness and of leaving his whole inside behind him sticking to the ceiling. Tom was very near shouting to be set down, when he found himself back in the blanket, but thought of East, and didn't; and so took his three tosses without a kick or a cry, and was called a young trump for his pains.

He and East, having earned it, stood now looking on. No catastrophe happened, as all the captives were cool hands, and didn't struggle. This didn't suit Flashman. What your real bully likes in tossing is when the boys kick and struggle, or hold on to one side of the blanket, and so get pitched bodily on to the floor; it's no fun to him when no one is hurt or frightened.

'Let's toss two of them together, Walker,' suggested he. 'What a cursed bully you are, Flashey!' rejoined the other. 'Up with another one.'

And so no two boys were tossed together, the peculiar hardship of which is, that it's too much for human nature to lie still then and share troubles; and so the wretched pair of small boys struggle in the air which shall fall atop in the descent, to the no small risk of both falling out of the blanket, and the

huge delight of brutes like Flashman.

But now there's a cry that the praepostor of the room is coming ; so the tossing stops, and all scatter to their different rooms ; and Tom is left to turn in, with the first day's experience of a public school to meditate upon.

The next day Tom was duly placed in the third form, and began his lessons in a corner of the big school. He found the work very easy, as he had been well grounded and knew his grammar by heart : and, as he had no intimate companion to make him idle (East and his other School-house friends being in the lower fourth, the form above him), soon gained golden opinions from his master, who said he was placed too low, and should be put out at the end of the half-year. So all went well with him in school, and he wrote the most flourishing letters home to his mother, full of his own success, and the unspeakable delights of a public school.

In the house, too, all went well. The end of the half-year was drawing near, which kept everybody in a good humour, and the house was ruled well and strongly by Warner and Brooke. True, the general system was rough and hard, and there was bullying in nooks and corners, bad signs for the future ; but it never got further, or dared show itself openly, stalking about the passages and hall and bedrooms, and making the life of the small boys a continual fear.

Tom, as a new boy, was of right excused fagging for the first month, but in his enthusiasm for his new life this privilege hardly pleased him ; and East and others of his young friends discovering this, kindly

allowed him to indulge his fancy, and take their turns at night fagging and cleaning studies. These were the principal duties of the fags in the house. From supper until nine o'clock, three fags taken in order stood in the passages, and answered any praepostor who called 'Fag', racing to the door, the last comer having to do the work. This consisted generally of going to the buttery for beer and bread and cheese (for the great men did not sup with the rest, but had each his own allowance in his study or the fifth-form room), cleaning candlesticks and putting in new candles, toasting cheese, bottling beer, and carrying messages about the house; and Tom, in the first blush of hero-worship, felt it a high privilege to receive orders from, and be the bearer of supper of old Brooke. And besides this night work, each praepostor had three or four fags specially allotted to him, of whom he was supposed to be the guide, philosopher, and friend, and who in return for these good offices had to clean out his study every morning by turns, directly after first lesson and before he returned from breakfast. And the pleasure of seeing the great men's studies, and looking at their pictures, and peeping into their books, made Tom a ready substitute for any boy who was too lazy to do his own work. And he soon gained the character of a good-natured willing fellow, who was ready to do a turn for anyone.

In all the games too he joined with all his heart, and soon became well versed in all the mysteries of football, by continued practice at the School-house little-side, which played daily.

The lower fourth form, in which Tom found himself at the beginning of the next half-year, was the largest form in the lower school, and numbered upwards of forty boys. Here stuck the great stupid boys, who for the life of them could never master the accidence ; the objects alternately of mirth and terror to youngsters, who were daily taking them up, and laughing at them in lessons, and getting kicked by them for so doing in play-hours. Then came the mass of the form, boys of eleven and twelve, the most mischievous and reckless age of British youth, of whom East and Tom Brown were fair specimens.

Tom, as has been said, had come up from the third with a good character, but the temptations of the lower fourth soon proved too strong for him, and he rapidly fell away, and became as unmanageable as the rest. In fact the only occasions on which they cared about their studies were the monthly examinations, when the Doctor came round to examine their form, for one long awful hour, in the work which they had done in the preceding month.

So East and Tom, and one or two more, became a sort of young Ishmaelites, their hands against everyone, and everyone's hand against them. They got to war with the masters and the fifth form, and with the sixth it was much the same. They saw the praepostors cowed by or joining with the fifth, and shirking their own duties ; so they didn't respect them, and rendered no willing obedience. It had been one thing to clean out studies for sons of heroes like old Brooke but was quite another to do the like for Snooks and Green, who had never faced a good scrummage at football, and couldn't keep the passages in order at night. So they only slurred through

their fagging just well enough to escape a licking, and not always that, and got the character of sulky, unwilling fags.

While they had been quite little boys, the scrapes they got into in the school hadn't much mattered to anyone ; but now they were in the upper school, all wrong-doers from which were sent straight to the Doctor at once : so they began to come under his notice ; and as they were a sort of leaders in a small way amongst their own contemporaries, his eye, which was everywhere, was upon them. They were sent for. It was very different from the first occasion when they had seen him, the remembrance of which was so pleasant that they had much less fear of him than most boys of their standing. This time when they came before him, however, the interview was of another kind. There they find the Doctor, not angry, but very grave. 'He has sent for them to speak very seriously before they go home. They have each been flogged several times in the half-year for direct and wilful breach of rules. This cannot go on. They are doing no good to themselves or others, and now they are getting up in the School and have influence. They seem to think that rules are made capriciously and for the pleasure of the masters ; but this is not so : they are made for the good of the School, and must and shall be obeyed. Those who thoughtlessly or wilfully break them will not be allowed to stay at the School. He should be sorry if they had to leave, as the School might do them both much good, and wishes them to think very seriously in the holidays over what he had said. Good night.'

And so the two hurry off horribly scared : the idea of having to leave has never crossed their

minds, and is quite unbearable. Five minutes afterwards the master of their form knocks at the Doctor's study door. After some other talk between them, the Doctor said, 'I want to speak to you about two boys in your form, East and Brown: I have just been speaking to them. What do you think of them?'

'Well, they are not hard workers, and very thoughtless, and full of spirits—but I can't help liking them. I think they are sound good fellows at the bottom.'

'I'm glad of it. I think so too. But they make me very uneasy. They are taking the lead a good deal amongst the fags in my house, for they are very active, bold fellows. I should be sorry to lose them, but I shan't let them stay if I don't see them gaining character and manliness. In another year they may do great harm to all the younger boys.'

'Oh, I hope you won't send them away,' pleaded their master.

'Not if I can help it. But now I never feel sure, after any half-holiday, that I shan't have to flog one of them next morning, for some foolish, thoughtless scrape. I quite dread seeing either of them.'

They were both silent for a minute. Presently the Doctor began again:

'They don't feel that they have any duty or work to do in the School, and how is one to make them feel it?'

'I think if either of them had some little boy to take care of, it would steady them. Brown is the more reckless of the two, I should say; East wouldn't get into so many scrapes without him.'

'Well' said the Doctor, with something like a sigh,

'I'll think of it.' And they went on to talk of other subjects.

[Next term, Tom finds that a new boy, by name George Arthur, has been allotted to him as a room-mate, instead of East. He doesn't like the change at first, but, remembering his own first days at school, he does his best to help Arthur to settle down. Gradually this new responsibility makes a great change in him. Four years later, he is a praepostor and captain of the School cricket XI. On his last day at Rugby, the School plays a match versus the M.C.C. It is just over.]

As Tom and the rest of the eleven were turning back into the close, one of the masters who was just leaving stopped him, and asked him to come up to tea. They walked together to the master's rooms. The kettle sang away merrily on the hob, the heap of books and papers were pushed away to the other end of the table, and they settled themselves down in the twilight to the serious drinking of tea.

After some talk on the match, and other indifferent subjects, the conversation came naturally back to Tom's approaching departure.

'Well, we shall all miss you quite as much as you will miss us,' said the master. 'You are the Nestor of the School now, are you not?'

'Yes, ever since East left,' answered Tom.

'By the by, have you heard from him?'

'Yes, I had a letter in February, just before he started for India to join his regiment.'

'He will make a capital officer.'

'Aye, won't he!' said Tom, brightening; 'no fellow could handle boys better, and I suppose soldiers are very like boys. And he'll never tell them

to go where he won't go himself. No mistake about that—a braver fellow never walked.'

'His year in the sixth will have taught him a good deal that will be useful to him now.'

'Well, I wish I were alongside of him,' said Tom. 'If I can't be at Rugby, I want to be at work in the world, and not dawdling away three years at Oxford.'

'What do you mean by "at work in the world"?' said the master, pausing, with his lips close to his saucerful of tea, and peering at Tom over it.

'Well, I mean real work; one's profession; whatever one will have really to do, and make one's living by. I want to be doing some real good, feeling that I am not only at play in the world,' answered Tom, rather puzzled to find out himself what he really did mean.

'You are mixing up two very different things in your head, I think, Brown,' said the master, putting down the empty saucer, 'and you ought to get clear about them. You talk of "working to get your living" and "doing some real good in the world", in the same breath. Now, you may be getting a very good living in a profession, and yet doing no good at all in the world, but the contrary, at the same time. Keep the latter before you as your one object, and you will be right, whether you make a living or not; but if you dwell on the other you'll very likely drop into mere money-making, and let the world take care of itself for good or evil. Don't be in a hurry about finding your work in the world for yourself; you are not old enough to judge for yourself yet, but just look about you in the place you find yourself in, and try to make things a little better and honester there. You'll find plenty to keep your hand in at Oxford, or

wherever else you go. And don't be led away to think this part of the world important and that unimportant. Every corner of the world is important. No man knows whether this part or that is most so, but every man may do some honest work in his own corner.' And then the good man went on to talk wisely to Tom of the sort of work which he might take up as an undergraduate ; and warned him of the prevalent University sins, and explained to him the many and great differences between University and School life ; till the twilight changed into darkness.

'I wonder where Arthur can be,' said Tom at last, looking at his watch ; 'why, it's nearly half past nine already.'

'Oh, he is comfortably at supper with the eleven, forgetful of his oldest friends,' said the master. 'Nothing has given me greater pleasure', he went on, 'than your friendship for him ; it has been the making of you both.'

'Of me, at any rate,' answered Tom ; 'I should never have been here now but for him. It was the luckiest chance in the world that sent him to Rugby, and made him my chum.'

'Why do you talk of lucky chances ?' said the master. 'I don't know that there are any such things in the world ; at any rate there was neither luck nor chance in that matter.'

Tom looked at him inquiringly, and he went on. 'Do you remember when the Doctor lectured you and East at the end of one half-year, when you were in the shell, and had been getting into all sorts of scrapes ?'

'Yes, well enough,' said Tom ; 'it was the half-year before Arthur came.'

'Exactly so,' answered the master. 'Now, I was with him a few minutes afterwards, and he was in great distress about you two. And after some talk, we both agreed that you in particular wanted some object in the school beyond games and mischief; for it was quite clear that you never would make the regular school work your first object. And so the Doctor, at the beginning of the next half-year, looked out the best of the new boys, and separated you and East, and put the young boy into your study, in the hope that when you had somebody to lean on you, you would begin to stand a little steadier yourself, and get manliness and thoughtfulness. And I can assure you he has watched the experiment ever since with great satisfaction. Ah! not one of you boys will ever know the anxiety you have given him, or the care with which he has watched over every step in your school lives.'

Up to this time, Tom had never wholly given in to, or understood, the Doctor. At first he had feared him. Later he had learnt to regard him with love and respect, and to think him a very great and wise and good man.

It was a new light to him to find that, besides teaching the sixth, and governing and guiding the whole School, editing classics, and writing histories, the great headmaster had found time in those busy years to watch over the career, even of him, Tom Brown, and his particular friends—and, no doubt, of fifty other boys at the same time; and all this without taking the least credit to himself, or seeming to know, or let anyone else know, that he ever thought particularly of any boy at all.

SECTION 1 — EDUCATION

Today

In India, schools corresponding in their aim to the English public schools have only been started within the last few years, and even now they are very few in number. Training for leadership, therefore, if at all it has been imparted to our young men of today, has been given in the high schools and in the universities. We know only too well that, for the most part, there has been a conspicuous absence of such training. It was about twenty-five years ago that this very serious defect in our educational system began to be discussed among educationists: the introduction of the Boy Scout system of training was one of the early attempts to provide a partial remedy.

Hitherto, the Indian universities have almost exclusively devoted themselves to preparing their students for academic examinations, and, to a smaller extent, to carrying on research. Such training of character as has been attempted has been largely through the organization of clubs and societies for games and sports, literary activities, and, in recent times, social service. Whether universities can be expected to do more than this is debatable, but there can be no question that the need for practical training in leadership, at *some* point in a young man's educational career, is a very urgent one.

In this fine speech the famous scholar, Sir S. Radhakrishnan, Spalding Professor of Eastern Religions and Ethics at Oxford University, and now Vice-Chancellor of the Benares Hindu University, expressed this need more than ten years ago before the Convocation of the Punjab University. How the need could be met he does not attempt to discuss in detail: but the speech is remarkable not only because it provides a far-reaching survey of the problems and difficulties the Indian student must learn to surmount, but because it is couched in such clear and well-chosen terms.

TRAINING FOR LEADERSHIP

BY SIR SARVEPALLI RADHAKRISHNAN

An address delivered in 1930

GRADUATION is only a milestone in life's journey. It does not mark the end of the educational road. In a very real sense, it is the commencement time, the beginning of a new journey which will test the toughness of your mental and moral fibre, the efficiency of your university training. The new experiences, the new problems and the new situations will demand from you the exercise of qualities for whose fostering the university functions. It does not require a prophet to say that India will rank as a free dominion in a short time. The future will give large powers and responsibilities to you. The historic role of the educated classes in the building-up of a new India cannot be over-estimated. If a leader is one who knows where he is going, who has a firm grasp of the insights and intuitions which have made our civilization so enduring, and who can harness them to every aspect of life, it is only the universities that can train men for leadership. The universities are more than institutions for higher learning and professional training; they are called upon to educate the younger generation, form its character—create a new type of intellectual leader.

It is obvious that your education has failed you if it does not develop in you a love of severe and sustained thinking, a power of resistance to popular sentiment and mob passion. An educated person will be willing to follow truth wherever it leads him

and will refuse to be forced into action simply because everybody else is doing it. He knows that in knowledge there is power, that truth shall make for freedom. To build a new India we must think deeply and plan wisely. Creation is an act of faith, an act of renewal and hope, rendered possible by a new vision. 'Our minds build cathedrals before the workmen have moved a stone; and our minds destroy them before the elements have worn down their arches,' says Professor Whitehead. Every great achievement is a vision in the soul before it becomes a fact of history. If it is true that facts dominate life, it is equally true that facts themselves obey the force of mind. Ideas control the world. They will triumph over the blind forces. For dynamic conceptions which will remodel society we must turn to the scholars and thinkers in the universities.

Never was a time when there was more need for hard thinking than in the present hour. We see on all sides a seething mass of turbulent life. We are faced with a situation produced, if we can imagine it, by a combination of varied movements which the European nations passed through during the last few centuries. The intellectual renaissance, the industrial revolution, the political struggle for freedom and democracy, and the religious reformation, which the Western nations faced individually and at different periods, India has to meet simultaneously, each magnified on account of the large area and population concerned. While great changes are taking place in every side of life, political and industrial, cultural and social, there is a good deal of loose and muddled thinking. The country seems to be marching forth into the unknown.

A casual visitor may feel that nothing interests Indians so much as politics. The deep questions which have engaged us down the ages are practically forgotten. There is a general disposition to despise cultural interests and make of life a rougher and a ruder thing than in the spacious past. I do not deny that there is a good deal to be said for the preoccupation with politics. The stress of the struggle for the bare physical necessities is more formidable than it ever was. Bernard Shaw says that a subject nation is like a man suffering from cancer. He can think of nothing else. He will listen to quacks who will profess to treat him. The teaching of the West is mainly responsible for the political unrest. It has been the explosive energy, the social dynamite. The political tradition derived from the ancient city-states of Greece, has taught us a passionate love for free citizenship and a juster social order. We have learnt that all government without the consent of the governed is the very definition of slavery. The aim of government is not so much efficiency as education. It is to afford training and opportunities for self-government. Muscles waste if they are not used; sinews become rigid if they are not stretched. Impetuous youth with its eager straining after the new vision chafes at every delay. The unrest is a tribute to the Britisher's work in India and not a reproach. We seem also to have learned from the West that success justifies all methods, and service to the nation excuses moral shortcomings. Such a view of political morals is not quite compatible with the tradition that cruelty is a crime for which there is no forgiveness. Nationalism means that we should do everything in our power to preserve our soul, our honour

and integrity, and maintain our individual style of dealing with problems. We want freedom to preserve ourselves and make our distinctive contribution to the progress of the world. We cannot do so if we surrender our individuality. We must not try to make for ourselves an English or a Russian soul, but must extract from these whatever will serve to enrich our spirit. We can profit only by that which we are able to transform into our substance.

It is, however, a fact that there is a good deal of loose thinking on this question. In the minds of many of our leaders the antagonism to British rule is strangely mixed up with a love of British institutions. They are more anxious to westernize our country so as to make it a replica of Europe. Even the criticisms of Western institutions are inspired by Western thinkers like Karl Marx and Tolstoy, Romain Rolland and Bertrand Russell. We are violently Western in some moods and violently Indian in others. We are transitional creatures burdened with uncertainties, with chaos in our minds. The silent struggles in the souls of men are of greater import than the spectacular ones in the political arena. Unfortunately, the universities whose function it is to control and organize fundamental thinking on basic issues seem to be suffering from inertia and indifference.

In the social and cultural realms the situation is not very different. We seem to swing between the two extremes of pride and self-contempt, constantly looking over our shoulders to see what others are about, wretched and anxious lest we make of our-

selves a laughing-stock. We are ashamed of the running sores in our body politic and yet bewildered as to how we could remove them. The protective garment of tradition has become a thing of shreds and patches. The abstract rationalism of the revolutionary would make a clean sweep of the past; the equally abstract historicism of the reactionary would make a clean sweep of the present. Our inward unity is lost. The integration of social, cultural and political forces is broken up. And what shall a university education profit us, if it does not restore the unity and synthesize the old and the new?

It is easy to be romantic about the good old days. But it is a sure sign of decadence if we live contentedly in the traditional fabric of ideas congealed into forms. In the flux of life, the past is not the present. Progress is marked by originality and adventure; decay by imitativeness and routine. However perfect the wisdom of the past may be, the forms in which it is clothed are not final. They require to be broken and made afresh. We must recover the spirit of life and convert it to fresh purposes. The spirit of a people is to be found not in what it was in past ages nor even in what it is now. As we survey the history of a nation, we get at something deep and foundational, something which is for ever forming itself anew, though it never reaches perfect expression. The spirit of a people can only be defined in terms of this growing ideal, this operative principle which is very imperfectly expressed in any specific stage, though clearly discernible when we study the several stages in their temporal succession. The secret of life is in the law of development. In India the main emphasis has been on the reality of the

life of spirit in man and the cosmos as a whole and a search for truth wherever it may be found. India has always stretched out her hands towards the developments of life. It is only the recovery of the true spirit that will help to loosen the hold of the complicated and unnecessary trappings. The wood, hay and stubble that have come down to us must be consumed in order that the things which are not shaken may remain.

This work of discriminating between the permanent and the transitory in our tradition can be done only by the educated classes who have sufficient respect for the past and trust in the present. Our education is a failure if we do not obtain during our college years such a conception of the universe round us, such an understanding of the movement of life and the progress of mind as to secure for us a vision of spirit in every detail of nature and life, the spirit in which all human souls, the humblest and the greatest, live, move and have their being. The aim of education is not simply to enrich the minds of people with new knowledge, but also to help them rise to their full spiritual stature. It must rouse them to the value of spiritual realities, turn their eyes from the things which are merely temporal to the things which are eternal, and enable them to pursue the values which are ultimate and not be occupied with merely utilitarian ends. Such an education will make us ashamed of our narrow creeds and inflexible faiths which make even social relations difficult. Ability to co-operate with others is the true test of education among individuals as well as communities.

The State is the citizen writ large, according to Plato. If we live under an irresponsible government, it is more our fault than our misfortune. The kind of government under which we live is, on ultimate analysis, a reflection of ourselves. The Greek orator declared that 'it is not walls but men who make a city'. It is not so much physical geography as intellectual community that moulds a nation. The sense of like-mindedness and community of interests require to be fostered if the feeling of nationality is to be furthered. Universities can stimulate common interests only if they are allowed to work in an atmosphere of freedom. It is a peculiarly difficult task for the universities to steer clear of dictation by the State and agitation by the people. The world over, there is a tendency for political opinions to become rigid dogmas. Communism in Russia is a religion and individualism is infidelity. When States assume the rigidity of churches, it becomes the primary duty of universities to protect us from the propaganda of the States themselves. In a country where the universities are endowed by the State, they require to be particularly careful and keep above all parties of religion and politics.

The universities must influence the whole generation and combat the sectional movements that are clogging our progress. They must cater to the educational needs of those who cannot, like ordinary students, enter their walls. An extramural department may well arrange single lectures or courses in suitable centres and institute diplomas in special studies. If the dangers of an industrialists' autocracy or a relapse into obscurantism are to be averted, an intensive programme of education will have to be adopted.

Culture is not mere learning. It is discrimination, understanding of life. Liberal education aims at producing moral gifts as well as intellectual, sweetness of temper as much as sanity of outlook. Into the art of living, the cultured man carries a certain grace, a certain refinement, a certain distinction which redeems him from the sterile futility of aimless struggle. Culture is not a pose of intellect or a code of convention, but an attitude of life which finds nothing human alien, common or unclean. An education that brings up a young man in entire indifference to the misery and poverty surrounding him, to the general stringency of life, to the dumb pangs of tortured bodies and the lives submerged in the shadows, is essentially a failure. If we do not realize the solidarity of the human community, nor have human relations with those whom the world passes by as the lowly and the lost, we are not cultured. The most depraved individual has his startling interest and the worst criminal is unique to his thumb-prints, as he knows to his cost. Great literature shames us out of our complacency and reveals to us something of the immense capacity of the human soul for suffering and isolation. We may suffer, we may fail, we may be forgotten, but we have succeeded in the true sense of the term if we refused to be vulgar, mean or squalid. If anything justifies life, it is notably, greatness. Man notices our failings, but God sees our strivings.

In our country today, we are suffering from want of understanding. Whether it is between the Indian and the British or the Hindu and the Moslem, we are up against the same difficulty. Even when we seem to understand each other, we suddenly reach a point

where it becomes clear that we do not have a sufficient grasp of each other's meaning. The trouble is not so much with regard to high philosophy and art as with practical affairs and political motives. Understanding of human relations and motives is not a matter of scientific method which can be taught in a university. It is a contagion of the spirit, not analysable or demonstrable, and yet it is not incommunicable. A good deal in this matter depends on the teachers and their outlook on life as distinct from their intellectual equipment. The unique experience of pursuing common ideals within the walls of the university, in spite of differences of temperament and creed, has consequences of wider import. The many pleasant friendships, many personal contacts, must not merely be vivid recollections but must remain with us to the end of our lives. It rests with you to pledge yourselves to one another, that, when misunderstandings and disputes arise, you will be among those who will counsel patience and restraint and proclaim that reason, fair play and listening to both sides are the solvents of all differences.

Matthew Arnold spoke of sweetness and light as the marks of culture. We may add to them a third, strength. Sweetness of temper, sanity of outlook and strength of spirit—patience, wisdom and courage—are the qualities of a cultured mind. There is a legend that ghosts do not speak until they drink blood ; even so our noble dreams do not get accomplished except through the blood of our hearts. It is through *tapas*, through the inward travail of the spirit, that anything great can be achieved. The

Upanishad says, the Supreme actualizes mighty possibilities through the force of *tapas*. *Sa tapo tapyata, sa tapas taptva idam sarvam asrjata.* ‘He performed *tapas*: having performed *tapas*, he produced all this whatsoever.’[1] The best work in the world is achieved by those who resign the prizes of the world and bear in pain the burden of defeated hopes. The rishis of ancient India knew no fear and feared no death. Buddha walked out of his palace to suffer and recreate. Christ is the man of sorrows. None who has not suffered to the utmost gets to the foundations of reality. In this matter of suffering, we men are amateurs; but our women friends are the professionals. In the re-creation of new India, their share will be considerable.

I want to lay special stress on the need for suffering and strength, as I suspect that a kind of new materialism has overtaken us. We seem to be coddling ourselves with comforts and are willing to use all our intellectual resources ruthlessly in the service of one end, material success. We are prepared to lay down our lives for higher wages and not for higher ideals. We seem to have almost a superstitious reverence for material conditions. Times of transition require a new simplicity of life, a new asceticism; and you, my young friends, to whom leadership in thought and practice is passing, need it most. We have no glittering prizes of wealth, power or glory to offer you, but only hardship, struggle and suffering. May the ideals of your university help you to face them with spirit and courage and save you from cynicism and despair. Farewell.

[1] *Tait. Up.*, II, 6.

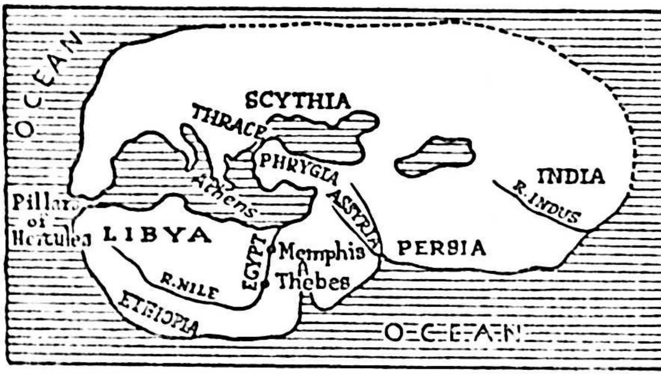
SECTION 2 — SCIENCE

Yesterday

CONSIDERING that Herodotus lived more than two thousand four hundred years ago, you may think that to choose him as representing the science of yesterday is to stretch the meaning of 'yesterday' almost to breaking-point! But there are good reasons for selecting one of the famous men of Ancient Greece rather than, let us say, Charles Darwin, Newton, or Sir Francis Bacon.

In the first place, the choice of one of the latter would not have enabled us to illustrate a different outlook upon science from that of today, because the outlook and the methods of Darwin and his great forerunners were essentially the same as those of scientists of our own time. The concern of the true scientist is to ascertain facts by careful observation or experiment, to build hypotheses or generalized theories concerning the laws of Nature on the basis of those observed facts, and then see whether the theories cover every possible case without exception. As Huxley says: 'In science, as in common life, our confidence in a law is in exact proportion to the absence of variation in the result of our experimental verifications.' But the men of science of the Middle Ages (as in all ages in which the belief prevailed that truth had been once and for all laid down in the sacred books of religion) reversed the process. Certain statements having been made by the wise men of the past (either in the *Bible* or in the works of the ancient philosophers and the fathers of the Christian Church), they sought to find facts consistent with those statements, rejecting as unreliable those which did not fit. We may laugh at this attitude, but let us ask ourselves how far we are medieval or how far we are modern in our own outlook upon matters on which we have some personal prejudice or predilection, for example, matters of religion, race, caste, nationalism or politics.

The great men of Ancient Greece are remarkable because in spite of their very restricted opportunities and lack of accurate and efficient apparatus, they were in many directions the forerunners of modern science. They



THE WORLD AS IMAGINED BY HERODOTUS

were primarily interested in discovering the truth, and not in proving the infallibility of some particular philosophy or religion. This was the role played by Aristotle in regard to the facts of the physical world: it was that of Socrates in regard to religion, morality and politics. Herodotus was contemporary with Socrates; he was not born in Greece, however, but at Halicarnassus, a city of Asia Minor. He had a passion for travel, and took delight in finding out every possible detail about the countries he visited and about the manners, customs and beliefs of the inhabitants. He wrote these down, with his own shrewd observations and opinions upon them. He travelled throughout a large part of the known world of his time, going as far east as Babylonia and Persia, northwards to the Crimea and the coast of modern Georgia, south along the river Nile into Upper Egypt, and west as far as Italy, where later, as a member of a Greek colony established there, he lived for about twenty years, completing

his great *History*. This is far more than a history in the ordinary sense of the word, for it not only gives information about the peoples whose countries Herodotus visited, and about their origin and development as far as the traveller could learn of it from his investigations, but it also describes in detail the many remarkable things that this keen-eyed Greek took note of, and often—as in the passage we have chosen—he mentions the opinions he heard, in addition to making his own attempt to explain the phenomena observed. It is, of course, hardly surprising to find that some of his explanations are quite wrong—as in the case of the one given here about the rise and fall of the waters of the river Nile—when it is remembered how much less reliable data he had to go upon than we now have. What is really remarkable is the spirit of inquiry and the keen perseverance with which this wonderful man of ancient days pursued knowledge wherever he could find it.

THE WONDERS OF EGYPT

From *The History of Herodotus*, translated by George Rawlinson

THE Egyptians, before the reign of their king Psammetichus, believed themselves to be the most ancient of mankind. Since Psammetichus, however, made an attempt to discover who were actually the primitive race, they have been of opinion that while they surpass all other nations, the Phrygians surpass them in antiquity. This king, finding it impossible to make out by dint of inquiry what men were the most ancient, contrived the following method of discovery: He took two children of the common sort, and gave them over to a herdsman to bring up at his fold,

strictly charging him to let no one utter a word in their presence, but to keep them in a sequestered cottage, and from time to time introduce goats to their apartment, see that they got their fill of milk, and in all other respects look after them. His object herein was to know, after the indistinct babblings of infancy were over, what word they would first articulate. It happened as he had anticipated. The herdsman obeyed his orders for two years, and at the end of that time, on his one day opening the door of their room and going in, the children both ran up to him with outstretched arms, and distinctly said '*Becos*'. When this first happened the herdsman took no notice; but afterwards when he observed, on coming often to see after them, that the word was constantly in their mouths, he informed his lord, and by his command brought the children into his presence. Psammetichus then himself heard them say the word, upon which he proceeded to make inquiry what people there was who called anything *becos*, and hereupon he learnt that *becos* was the Phrygian name for bread. In consideration of this circumstance the Egyptians yielded their claims, and admitted the greater antiquity of the Phrygians.

Concerning the nature of the river Nile, I was not able to gain any information either from the priests or from others. I was particularly anxious to learn from them why the Nile, at the commencement of the summer solstice, begins to rise, and continues to increase for a hundred days—and why, as soon as that number is past, it forthwith retires and contracts its stream, continuing low during the whole of the

winter until the summer solstice comes round again. On none of these points could I obtain any explanation from the inhabitants, though I made every inquiry, wishing to know what was commonly reported—they could neither tell me what special virtue the Nile has which makes it so opposite in its nature to all other streams, nor why, unlike every other river, it gives forth no breezes from its surface.

Some of the Greeks, however, wishing to get a reputation for cleverness, have offered explanations of the phenomena of the river, for which they have accounted in three different ways. Two of these I do not think it worth while to speak of, further than simply to mention what they are. One pretends that the Etesian winds cause the rise of the river by preventing the Nile water from running off into the sea. But in the first place it has often happened, when the Etesian winds did not blow, that the Nile has risen according to its usual wont; and further, if the Etesian winds produced the effect, the other rivers which flow in a direction opposite to those winds ought to present the same phenomena as the Nile, and the more so as they are all smaller streams, and have a weaker current. But these rivers, of which there are many both in Syria and Libya, are entirely unlike the Nile in this respect.

The second opinion is even more unscientific than the one just mentioned, and also if I may say so, more marvellous. It is that the Nile acts so strangely because it flows from the ocean, and that the ocean flows all round the earth.

The third explanation, which is very much more plausible than either of the others, is positively the furthest from the truth; for there is really nothing in

what it says any more than in the other theories. It is, that the inundation of the Nile is caused by the melting of snows. Now, as the Nile flows out of Libya, through Ethiopia, into Egypt, how is it possible that it can be formed of melted snow, running, as it does, from the hottest regions of the world into cooler countries? Many are the proofs whereby anyone capable of reasoning on the subject may be convinced that it is most unlikely this should be the case. The first and strongest argument is furnished by the winds, which always blow hot from these regions. The second is, that rain and frost are unknown there. Now whenever snow falls, it must of necessity rain within five days; so that, if there were snow, there must be rain also in those parts. Thirdly, it is certain that the natives of the country are black with the heat, that the kites and the swallows remain there the whole year, and that the cranes, when they fly from the rigours of a Scythian winter, flock thither to pass the cold season. If then, in the country whence the Nile has its source, or in that through which it flows, there fell ever so little snow, it is absolutely impossible that any of these circumstances could take place.

As for the writer who attributes the phenomenon to the ocean, his account is involved in such obscurity that it is impossible to disprove it by argument. For my part I know of no river called Ocean, and I think that Homer, or one of the earlier poets, invented the name, and introduced it into his poetry.

Perhaps, after censuring all the opinions that have been put forward on this obscure subject, one

ought to propose some theory of one's own. I will therefore proceed to explain what I think to be the reason of the Nile's swelling in the summer time. During the winter, the sun is driven out of his usual course by the storms, and removes to the upper parts of Libya. This is the whole secret in the fewest possible words; for it stands to reason that the country to which the Sun-god approaches the nearest, and which he passes most directly over, will be scantest of water, and that there the streams which feed the rivers will shrink the most.

To explain, however, more at length, the case is this. The sun, in his passage across the upper parts of Libya, affects them in the following way. As the air in those regions is constantly clear, and the country warm through the absence of cold winds, the sun in his passage across them acts upon them exactly as he is wont to act elsewhere in summer, when his path is in the middle of heaven—that is, he attracts the water. After attracting it, he again repels it into the upper regions, where the winds lay hold of it, scatter it, and reduce it to a vapour, whence it naturally enough comes to pass that the winds which blow from this quarter—the south and south-west—are of all winds the most rainy. And my own opinion is that the sun does not get rid of all the water which he draws yearly from the Nile, but retains some about him. When the winter begins to soften, the sun goes back again to his old place in the middle of the heaven, and proceeds to attract water equally from all countries. Till then the other rivers run big, from the quantity of rain-water which they bring down from countries where so much moisture falls that all the land is cut into gullies;

but in summer, when the showers fail, and the sun attracts their water, they become low. The Nile, on the contrary, not deriving any of its bulk from rains, and being in winter subject to the attraction of the sun, naturally runs at that season, unlike all other streams, with a less burthen of water than in the summer time. For in summer it is exposed to attraction equally with all other rivers, but in winter it suffers alone. The sun, therefore, I regard as the sole cause of the phenomenon.

The following are the peculiarities of the crocodile: —During the four winter months they eat nothing; they are four-footed, and live indifferently on land or in the water. The female lays and hatches her eggs ashore, passing the greater portion of the day on dry land, but at night retiring to the river, the water of which is warmer than the night-air and the dew. Of all known animals this is the one which from the smallest size grows to be the greatest: for the egg of the crocodile is but little bigger than that of the goose, and the young crocodile is in proportion to the egg; yet when it is full-grown, the animal measures frequently seventeen cubits and even more. It has the eyes of a pig, teeth large and tusk-like, of a size proportioned to its frame; unlike any other animal, it is without a tongue; it cannot move its under-jaw, and in this respect too it is singular, being the only animal in the world which moves the upper jaw but not the under. It has strong claws and a scaly skin, impenetrable upon the back. In the water it is blind, but on land it is very keen of sight. As it lives chiefly in the river, it has the inside of its mouth constantly

covered with leeches; hence it happens that, while all the other birds and beasts avoid it, with the trochilus it lives at peace, since it owes much to that bird: for the crocodile, when he leaves the water and comes out upon the land, is in the habit of lying with his mouth wide open, facing the western breeze: at such times the trochilus goes into his mouth and devours the leeches. This benefits the crocodile, who is pleased, and takes care not to hurt the trochilus.

The crocodile is esteemed sacred by some of the Egyptians, by others he is treated as an enemy. Those who live near Thebes, and those who dwell around Lake Mœris, regard them with especial veneration. In each of these places they keep one crocodile in particular, who is taught to be tame and tractable. They adorn his ears with ear-rings of molten stone or gold, and put bracelets on his fore-paws, giving him daily a set portion of bread, with a certain number of victims; and, after having thus treated him with the greatest possible attention while alive, they embalm him when he dies and bury him in a sacred repository. The people of Elephantine, on the other hand, are so far from considering these animals as sacred that they even eat their flesh. In the Egyptian language they are not called crocodiles, but *champsae*. The name of crocodiles was given them by the Ionians, who remarked their resemblance to the lizards, which in Ionia live in the walls, and are called crocodiles.

The modes of catching the crocodile are many and various. I shall only describe the one which seems to me most worthy of mention. They bait a hook with a chine of pork and let the meat be carried out into the middle of the stream, while the hunter upon

the bank holds a living pig, which he belabours. The crocodile hears its cries, and, making for the sound, encounters the pork, which he instantly swallows down. The men on the shore haul, and when they have got him to land, the first thing the hunter does is to plaster his eyes with mud. This once accomplished, the animal is dispatched with ease, otherwise he gives great trouble.

SECTION 2 — SCIENCE

Today

THERE are two outstandingly important kinds of scientific work going on in our own times, both of which are essential for progress. The first of these is the research of Pure Science; that is, the attempt made to discover the principles and natural laws according to which the material of the universe has been formed and under which it is ever being modified and re-formed. For the sake of convenience we might term this scientific discovery. The second may be termed scientific invention, consisting as it does in the endeavour to apply the principles discovered to the achievement of purposes desired by Man. This form of science is often called Applied Science.

People who have had no scientific training often fail to realize the value of the first of these two kinds of Science. It is easy to appreciate the work of a Marconi, an Edison, or a Stephenson, when we enjoy the advantages of radio, electric light, or the railway train. It is not so easy to understand how the work of men like Rutherford and Millikan has probably laid the foundations of similar 'useful' inventions of which our grandchildren will reap the benefits.

In the following interesting passages from a recent *Pelican* book written by a scientist of our time, examples

are given of both of these forms of scientific research, and it is clearly shown how invention is dependent upon discovery. An additional interest attached to this extract is that it is in itself an example of another Applied Science, for it is written in a language known as Basic English. Basic English is an invention of a Cambridge philologist named C. K. Ogden. It is English so simplified in respect of vocabulary and grammatical structure that only 850 words are employed. The object of this invention was to provide a language, easy to learn and to use correctly, for international communication. A form of English was chosen, because that language is already more widely in use than any other; but as two of the greatest difficulties of the English language are those which arise from its very extensive vocabulary and its complicated use of verbs, these were two of the most important points in which standard English was simplified in Basic.

You may find it interesting to try to observe in what ways the English of this extract differs from the normal English to which you are accustomed.

MODERN SCIENTIFIC DISCOVERIES AND INVENTIONS

BY H. STAFFORD HATFIELD, PH.D., F.INST.P.

From *Inventions and their Uses in Science Today*

GOING TO THE FARTHEST LIMITS

WHAT would be a good general statement of the process of 'scientific research'—that is, work undertaken in the hope of making discoveries or of getting more knowledge of natural things? Here is an idea which is as good as most: it is seeing what takes place when you go to the farthest limits.

At the start, every operation in science is an attempt to be as simple as possible. However complex the apparatus, its true purpose is to get all outside effects cut out so that you are able to see one thing, and one only—the effect of temperature, or pressure, or magnetic attraction, or electric force, without all the other effects which come into play in observations which are not controlled in the right way.

Now this going to the farthest limits in science takes other forms, such as seeing what takes place when things are made warmer or colder than ever before, or are put under a higher pressure, or a lower pressure, or in a stronger magnetic or electric field, and so on. Some of the most interesting inventions of the greatest use have been made, in the first place, by experts working on this idea of going as far as possible. There are certain Americans who have been making tests at pressures much higher than any engineer ever had any idea of getting to; there are certain Germans who have been getting higher temperatures than man has ever got before. A man from Sweden came to London a short time back with a machine of his invention which gives a stronger 'centrifugal' force than any other machine. Centrifugal force is the force experienced by a body when going round a curve, driving it to the outside of the curve. Our bodies, and any loose parcels we may have with us, are acted on by this force in a railway carriage or automobile. If a vessel full of liquid is turning round very quickly about a line going through the middle of it, bits of solid in the liquid are forced to the sides of the vessel. Such an apparatus is much used for getting liquids like wine clear. In the new apparatus, the rate of turning is

so great that the force on a bit of solid may be a million times its weight. There is no use at present for such an apparatus in industry, though this may come ; but in it the force is so great that even chemical substances in the liquid are moved by it, and by measuring the amount of this motion, we are given much-needed light on the size of their smallest units, their molecules. Here we have the organic chemist making new inventions in machines for helping him to knowledge in his special line of work. But we may be quite certain that these new inventions will be of use in industry.

One example of science going to the farthest limits, one of the most interesting of all, is that of cold. Cold is simply a condition of being without heat. If you give heat to anything, you make it warmer ; if you take heat away, you make it colder. Now quite a long time back, about 1860, experts came to a decision on some important points. How much heat is it possible to take away from a body ? How cold are you able to make a thing ? Is there a limit ? Is it possible to take away all the heat from a body ?

The answer given was simple. If we were able to get the temperature of a body down to —273°C. there would be no more heat in it. It would be at the lowest possible temperature, 'absolute zero' as it is named, 273 degrees lower than the temperature at which ice becomes water. But—and this is one of the most important 'buts' there is—you would never be able to make anything quite as cold as that. You would never be able to take away *all* the heat from a body.

With this statement, the science of heat was given a new twist. When the idea had been worked out, it gave the science of physics a sort of Mount Everest for strong men to make attempts on: here it was more a question of strong brains than strong bodies. Getting to the top point of Everest (so far nobody has done so) is a question of fighting one's way up through snow and ice, with harder and harder going the nearer one gets to the top. Going 273° *up* the scale of temperature is no trouble. Tin becomes liquid over a gas flame at about that temperature. Going *down* the temperature scale is like going up Everest, the farther you get, the greater the trouble and the slower you go. A hundred years back, absolute zero was 200° away; fifty years back, 100°; thirty years back, 5° only. It took about twenty years to get down 4° more; and to get down the last degree (all but three-thousandths) has taken ten years. By the way, you see that the theory of absolute zero is working out very well; the nearer you get to it, the harder it becomes to go any farther.

The journey down to the lowest degree of cold has been interesting in two ways; firstly, because it has had the effect of producing about six very important inventions; secondly, because no very strange or surprising discovery was made till the last ten degrees of the journey. Up to that point the behaviour of things was normal; gases became liquid and then solid when they were made very cold; electric currents went through metals more readily and so on. But in the last ten degrees some very strange things take place; things which are strange because we are unable to give reasons for them, and because they do not seem to be in harmony with our ideas at all.

I will, however, first say something about one invention which is common knowledge now. In every town great carts full of ice may be seen in the streets, even in the summer. Now a Frenchman, Thilorier, who made solid carbon-dioxide (CO_2) a hundred years back, is responsible for the existence of the ice-man of the present day. Carbon-dioxide is normally a gas, made by burning carbon (coal chiefly) in air; but it is best got in the process of making beer, because it is produced by the growth of 'yeast', a very simple plant living on sugar and producing alcohol and carbon-dioxide. When this gas is put under a pressure 30 times as great as the normal air pressure it becomes liquid. When the pressure is taken off, a certain amount of carbon-dioxide in the form of gas comes off very quickly, the temperature becomes very low, and the liquid gets so cold that most of it goes solid. This snowwhite solid has normally a temperature of —80°C. For about 90 years men of science made use of solid carbon-dioxide for producing what was then great cold. But the business brains of America, and later Great Britain, saw that money might be made by using 'dry ice' as it was named. It is interesting as an example of how profits are made. All of us who are not very young have seen Italians who did a trade in cheap ices from beautifully ornamented hand-carts, carts which were clearly of some weight. Now it was hard work for the Italian pushing this cart, chiefly full of ice to keep his goods cold. But a thing which has the same effect as ice and is of less weight, solid carbon-dioxide, makes it possible for ices to be taken round with much less trouble.

Making liquid carbon-dioxide solid was quite

simple. The second important step on the way down to lower temperatures was making air liquid. There is no need to give you details of the process, but it was done about fifty years back. Air was got in a liquid form, and while the process was being worked out, an invention which is very important for our everyday existence was made The 'vacuum flask'—'thermos', as one of its trade names is—was the invention of Sir James Dewar. He had need of a vessel in which to put the liquid air and hydrogen he was producing, so that heat from outside would have no effect on them. So he put two glass vessels one inside the other, joined together at the lip, and took the air out of the space between the two. Making vacuum flasks in this way is now a great industry. And so is the making of liquid air, and from it, oxygen, argon (A), neon (Ne). Great amounts of all these gases are used : oxygen is used for joining and cutting metals, and argon and neon for electric lights and signs.

All I have said so far has had only one purpose : to get you interested in what is taking place today. You have seen how certain inventions have been of very great use, inventions which were only made in the first place for the purpose of getting lower and lower temperatures. Now it is only in our day that interest in the question of getting low temperatures has become so great. Thirty years back hydrogen gas was made liquid. Now hydrogen is an interesting substance, because in its chemical behaviour it is quite like a metal. So it seemed probable that liquid hydrogen would be a metal, like mercury, and there

were a great number of attempts to make it liquid. But unhappily, the liquid, when at last it was got, was not like a metal at all ; it was a clear liquid like water. After that, naturally, less interest was taken in this question of very low temperatures. After all, the boiling-point of liquid hydrogen is—258°C., or only 15 degrees higher than absolute zero. Helium (He) is the only one of all the gases of which we have any knowledge which is not made liquid by this degree of cold. No one had any doubt that helium would become liquid if anyone took this trouble so as to make certain. Workers in this field got down farther and farther over those fifteen degrees from absolute zero—a range no greater than that between the temperatures of a summer and winter day. They were well rewarded. In that short range of temperature, some of the most surprising discoveries of the present day have been made.

The work was far from straightforward. Helium was in those days a gas which it was very hard to get—and then only in the smallest possible amount. It was produced by heating certain uncommon stones. It was general knowledge that the gases coming up from the earth with the water from certain warm salt springs (the springs at Bath, and some in America) had some helium in them ; but the idea of separating this completely seemed quite impossible. Dewar made the attempt, but without effect, because he had no idea that there was some neon in the Bath springs. At last, after much trouble, the gas was produced by Ramsay from a very uncommon natural stone, Cleveite ; and Kammerlingh Onnes, in Leyden, at last got enough to make liquid helium. Again the substance produced was a water-white liquid. Most uninterest-

ing, you may say ; but by using it Onnes got down to an even lower temperature, only two or three degrees from absolute zero. And there he made the most surprising discovery of all : the fact that at these low temperatures certain metals let electric current go through them without loss of power. So strange an idea would not have been possible even to a writer of the H. G. Wells school. Get a ring made of any one of certain metals down to two or three degrees from absolute zero, and you are able to send an electric current through it which will go on for ever. For those who have some knowledge of electric science, let me give a more detailed account. If you have an open ring of wire in a magnetic field, a 'voltage', that is, an electric force with a tendency to make a current, will be produced in the ring by any change in the field. If the ends of the open wire ring are joined together, you get a current round and round it whenever a change is made in the force of the magnetic field in which it is placed. Normally this current comes to an end quickly, because of the electric 'resistance' of the wire. This 'resistance' may be taken as quite like the force causing water which is going round and round in a vessel to come quickly to a stop—that is, the rubbing of the water against the sides of the vessel. To say to a man of science two or three years back that it was possible to make an electric current go on for ever in a metal would have been like saying that a thing put in motion would go on for ever without the need of driving power. But it is clear to us now that if the wire is of the right metal and cold enough, the current will not be stopped. It goes on for ever.

It is clear that this discovery might be of the greatest use. The size and the price of the electric network by which power is sent round England are dependent on the resistance of the thick aluminium wire of which it is made. If that wire had no resistance, you would be able to send any amount of power from the north of Scotland to London by two wires like those used for your electric bell. The reason why we have to make use of thick, strong aluminium and high voltages (which are a cause of more trouble) is because of the resistance offered to the electric current by aluminium. The discovery that it is possible to get metal which has no resistance to an electric current is of the highest value, and it was the outcome of making observations which had no other purpose than the desire to see what takes place at the lowest possible temperatures. It is to be noted, however, that at present there seems little hope of getting metal having no resistance at normal temperatures. But such troubles are frequently overcome.

No one had the smallest idea that anything very strange would take place in going down those last ten degrees to get the last bit of heat from a body. If all the liquid is taken out of a bottle by degrees, there is no reason for there to be any change in the properties of the bottle when the last spoon-full is taken out. But the most surprising thing of all is that the resistance of the metal does not become slowly less and less when it is made colder ; it comes to an end quite suddenly at a fixed temperature, less than 8° higher than absolute zero, and the metal does not seem to be changed in any other way. No one, then or now, is able to give the reason for these strange effects. They are not in agreement with our

knowledge on other points. This is all the more surprising because it is possible to give reasons, based on new physical ideas, for some of the other strange things which take place at low temperatures.

This discovery gave a great impulse to work on the science of cold. Still stranger facts have come to light. One most surprising outcome of this work has been to make it clear that the behaviour of liquid and solid helium is completely unlike that of any other substance. Heat, which makes its way more or less slowly through all other substances, goes straight through helium in no time at all. So far we have been unable to get any good picture formed of the reasons for this fact.

But while only one or two men had been working year after year for the 'new low record' of cold, science in industry had been making use of earlier inventions. The first to be used in industry was liquid air, then the gases neon, krypton (Kr), xenon (Xe), which are present in air in very small amounts and are used for making the brightly coloured advertisement lights of our great towns. Then came the development of airships, and the building of great plants for separating the gas helium, which comes up from the earth with the water of warm salt springs. There are different opinions about the value of airships, but for a time they were at work transporting persons and goods quite as regularly as the airplane lines. Helium is the only possible gas for airships which is safe from the danger of fire, and its use in them has certainly given a great impulse to work on low-temperature effects.

Helium is the hardest of all gases to make liquid. It becomes solid at 1° from absolute zero (—272° C.), boiling at about 4°C. higher than that. Now up to the present, the way in which all very low temperatures have been got is by boiling away liquid gases under low pressure. The gas is first made liquid by high pressure, and in boiling it gets colder and colder. Up to a very short time back, the greatest cold of which we had any knowledge was that got by boiling helium under low pressure, less than a degree from absolute zero. But it seemed quite impossible to go any farther, because we were quite certain that liquid helium was the only liquid in existence at such low temperatures. It was necessary to get a new idea. Now when certain salts, such as chrome alum ($K_2SO_4.Cr_2(SO_4)_3.24H_2O$), are put in a strong magnetic field, their temperature goes up a little, and when the field is cut off, they become colder. So chrome alum was put in a strong magnetic field and made cold by liquid helium to the lowest possible point, and then the magnetic field was cut out. And in this surprising way, what had not seemed possible was done, and a new low-temperature record of only three-thousandths of a degree from absolute zero was made.

SCIENCE AND FARMING

FIFTY years back, no farmer would give any attention to what science had to say about farming. In those days all the science experts were quite certain that the working farmer was a person with the mind of an Early Briton. And the farmer, like the persons

in every other industry, was quite as certain, for general reasons and from sad experience, that the science expert was commonly without working experience and that his suggestions were of no use at all. The men of science who went into the question of farming the land and producing animals, came to the decision that farmers had a very poor knowledge of their work, and that it was the business of science to give them a better. Farming by science was attempted, with surprising effects. I do not say that they were quite what the experts were hoping for, or that they had any business value. But at any rate the experts got some experience which made them a little less certain of their powers. They saw that the farmer had much more knowledge than they had about the *how*, though he might not be able to say *why*. And it became clear that it would be a very long time before they would be able to say *why*. A long process of building up knowledge was necessary.

The building was done, and for some years now the teachings of science have been of increasing value to farmers. We now have a great amount of knowledge about how to make land fertile, what to do and what not to do with certain sorts of earth, how to go about the destruction of damaging insects, and, most important of all, how healthy plants and animals, which will put up a good fight against disease, may be produced. All these things are now under the care of special organizations, supported by the government in most countries, and any person whose business is producing plants or animals in any part of the earth is very foolish if he does not get from the government all the latest knowledge about his special line.

I have only time to give you an account of one important development which has been started as an outcome of the work of science in this field. It may seem to you somewhat limited in its range ; it is chiefly of interest to those whose business is producing animals under conditions such as are general in this country. Here we are all used to the idea that cows and sheep may be put out to grass through the spring and summer, but that through the winter they have to have food which comes from other countries. From earliest times we have let our grass come to its full growth, cutting and drying it at the end of the summer. If the weather is good, the cut grass gets dry naturally in the fields. The drying process is helped by turning it over. It is then taken in and stored, and a certain amount of it is given as food to our animals every day through the winter. But cows whose only food is this grass do not give us enough milk or good meat. It is necessary to give them in addition oil-cake and other foods which have in them fat and body-building material.

Now it is clear to every farmer that there is no better food than young grass, and that when cows are getting enough of it, they are getting everything necessary to make them healthy. The science expert says that young grass has a great amount of food substance and salts and, in addition, 'vitamins', those substances which, though present in only very small amounts, are as necessary to animals as to man if they are to be healthy. These vitamins from the young grass are in the milk and in this way they come to the babies who get their milk from cows living on young grass of high quality.

The new idea I am talking to you about is like such

a number of ideas which have made great changes in man's existence. It is quite simple and clear when you have been given an account of it. But at a first hearing it seems to most farmers a very unsafe change to make in their way of working. The idea here is to get the young grass cut, and after drying it by a special process (the weather will not let it get dry naturally in the spring), it is stored up for food for the animals in the winter. A new sort of oven is necessary for drying it. The young grass is cut and put into this oven, which is let out like other farm machines; coal is burned in it, for which payment has to be made. A dry grass is produced, which has the most pleasing smell, and it is stored for use in the winter.

Let us go into the question of the price of such a process in this country. Taking everything into account—payment for land and workers, taxes, 'fertilizer', and coal—the price of this dry grass is less than £4 a ton. The English farmer gives from £7. 10s. to £9 a ton for winter food for his cows which is no better. One point, naturally, has to be kept in mind. In working out the price, I took into account 'fertilizer'. This is the name for chemical or natural material put on land to make it fertile. Part of the substances forming plants are taken from the earth, and if those substances are not put back in some form of fertilizer, it will not be possible to go on taking more food out of grassland than under the old system of farming, without using up the land. If this system is worked, science has to be used to make your grassland fertile.

I am giving an account of this development because it seems to me that this machine which has been

made for drying plant material quickly and completely might be used for other purposes. Experience has made it clear that the dry material keeps all its good properties—even the delicate vitamins are undamaged. Drying is one of the oldest processes used by man in fighting against the natural changes of the year, by which we get enough food at one time, and nothing, or very little, at another. Meat is made dry, as in the African 'biltong'; dry fruits of different sorts are put on the market. Now that the question of cheap drying has been answered, it is for farmers everywhere to see what use they are able to make of it for their special needs.

SECTION 3—SPORT

Yesterday

THOUGH the writer of this passage is one of the great literary figures of yesterday, the events which he here describes belong to an earlier time, that of the decline of the Roman Empire. But the choice of this kind of sport as representing the tastes of yesterday is deliberate. If we had chosen, for example, an account of a cricket match of the last century (such as you may find in *Tom Brown's Schooldays*) or even that of a medieval tournament as described in Scott's *Ivanhoe*, the spirit of sportsmanship shown in those contests would not have been essentially different from that which prevails in the games and sports of our own time. Such is not at all the case with the 'games' of Rome.

The character of a people, as well as of individuals, is strongly revealed in the games they enjoy. Consider the athletic contests beloved by the ancient Greeks. Consider the contests of skill with weapons, described in the ancient

epics of India. Consider medieval sports, such as cock-fighting and bull-baiting. Consider games such as chess, *pachesi*, poker, and bridge. Consider the Spanish bull-fight, and modern American football; consider prize-fighting and horse-racing anywhere. Much can be gathered from these regarding the motives, hidden complexes, and general attitude to life of the people who take part in, or enjoy them.

The Roman games, or displays of fighting or of chariot-racing by trained professionals, usually slaves, were, in the first place, shows provided to please a population of city-folk, many of whom were either idle rich or unemployed poor. They were usually given at the expense of some high official or other who, for reasons of his own, wished to gain or to retain the popular favour. The nature of the games had to be such as would appeal to the tastes of the majority of those who flocked to see the show. What sort of tastes those were we can best gather from the extract which follows.

The story, of which this description of the Roman public amusements forms a part, has for its hero Glaucus, a Greek-born citizen of Pompeii. Glaucus has fallen in love with a girl, also Greek by origin, by name Ione. But this girl and her brother Apæcides are orphans who have been left under the guardianship of Arbaces, an Egyptian priest of Isis; and Arbaces wants Ione for himself. The young man Apæcides, having been in the priest's care since he was a child, has been influenced to enter the priesthood of Isis, but he makes the acquaintance of some Christians who prove to him that the wonders performed by Arbaces are done by trickery and not by the power of the goddess as the priest claims them to be. Apæcides becomes a Christian and plans with a Christian comrade, Olinthus, to disclose publicly the trickery of the priest. Arbaces gets to know of this, and, meeting Apæcides in a lonely spot, stabs him to death. Then he gets Glaucus arrested for the murder, the latter having come across the body of Apæcides, and no one else having been present (as Arbaces at first thinks) to bear witness against the real murderer.

Olinthus is also arrested for conspiring against the priest of Isis, for in those times the religion of Isis was popular in the Roman world, and Christianity was persecuted. Apæcides having been known as a candidate for the priesthood of Isis, there is strong popular resentment against his murder, and Glaucus is condemned to die by being put into the arena with a lion, at the forthcoming games. Olinthus is condemned to a similar fate. Thus it appears as if Arbaces' crime would go undetected and he would also get rid of his rival Glaucus. But there had actually been a witness to the crime, another priest of Isis, called Calenus. This man comes to Arbaces and threatens to expose him unless he is given a large sum of money. Arbaces tricks the greedy priest into going with him into the underground treasury where he keeps his wealth, and there he locks him in, to starve to death. Again it seems as if Arbaces would be successful. But a slave-girl who was deeply attached to Glaucus had heard what was going on between Arbaces and Calenus. She sent a message to Sallust, a Roman nobleman who had been a close friend of Glaucus, and Calenus was released just in time, and brought to the arena, to confront Arbaces at the moment when Glaucus was facing his doom there. Popular feeling now turns against Arbaces and the people demand that he should suffer the fate to which Glaucus had been condemned. But at that instant the volcanic eruption and earthquake began, in which the whole of Pompeii was destroyed. Arbaces escapes from the arena, to meet a worse death in the doomed city.

THE ROMAN GAMES AT POMPEII

By Lord Lytton

From *The Last Days of Pompeii*

Greyly broke forth the dawn of the last day of Pompeii. The air was uncommonly calm and sultry

—yet it was remarked in surprise by the early fishermen, that, despite the exceeding stillness of the atmosphere, the waves of the sea were agitated, and seemed, as it were, to run disturbedly back from the shore.

Despite the earliness of the hour, the gates of the city were already opened. Horsemen upon horsemen, vehicle after vehicle, poured rapidly in ; and the voices of numerous pedestrian groups, clad in holiday attire, rose high in joyous and excited merriment ; the streets were crowded with citizens and strangers from the populous neighbourhood ; and noisily—fast—confusedly swept the many streams of life towards the fatal show.

Arbaces arrayed himself that day with more than usual care. Over his tunic flowed a loose eastern robe, half gown, half mantle, glowing in the richest hues of the Tyrian dye ; and the sandals, that reached half-way up to the knee, were studded with gems, and inlaid with gold.

It was customary for men of rank to be accompanied to the shows of the amphitheatre by a procession of their slaves and freedmen ; and the long 'family' of Arbaces were already arranged in order, to attend the litter of their lord.

The procession moved along slowly, and with much solemnity, till now, arriving at the place where it was necessary for such as came in litters or chariots to alight, Arbaces descended from his vehicle, and proceeded to the entrance by which the more distinguished spectators were admitted. And now, from the spot where Arbaces sat, his eyes scanned the mighty and impatient crowd that filled the stupendous theatre.

On the upper tier (but apart from the male spectators) sat the women, their gay dresses resembling some gaudy flowerbed. On the lower seats round the arena sat the more high-born and wealthy visitors—the magistrates and those of senatorial or equestrian dignity ; the passages which, by corridors at the right and left, gave access to these seats, at either end of the oval arena, were also the entrances for the combatants. Strong palings at these passages prevented any unwelcome eccentricity in the movements of the beasts, and confined them to their appointed prey. Around the parapet which was raised above the arena, and from which the seats gradually rose, were gladiatorial inscriptions, and paintings wrought in fresco, typical of the entertainments for which the place was designed. Throughout the whole building wound invisible pipes, from which, as the day advanced, cooling and fragrant showers were to be sprinkled over the spectators.

Now, with a loud and warlike flourish of trumpets the gladiators, marshalled in ceremonious procession, entered the arena. They swept round the oval space very slowly and deliberately, in order to give the spectators full leisure to admire their stern serenity of feature, their brawny limbs and various arms, as well as to form such wagers as the excitement of the moment might suggest.

'Oh !' cried the widow Fulvia to the wife of Pansa, as they leaned down from their lofty bench, 'Do you see that gigantic gladiator ? How strangely he is dressed !'

'Yes,' said the ædile's wife, with complacent im-

portance, for she knew all the names and qualities of each combatant ; 'that is Niger : he is a *retiarius* or netter ; he is armed only, you see, with a three-pronged spear like a trident, and a net ; he wears no armour. He is a mighty man, and is to fight with Sporus, yon thick-set gladiator, with the round shield and drawn sword, but without body armour ; he has not his helmet on now, in order that you may see his face—how fearless it is !'

'But surely a net and a spear are poor arms against a shield and sword ?'

'That shows how innocent you are, my dear Fulvia ; the *retiarius* has generally the best of it.'

'But who is that handsome gladiator ? By Venus ! his limbs are beautifully shaped !'

'It is Lydon, a young untried man ; he had the rashness to challenge yon other gladiator similarly dressed—Tetraides. They fight first in the Greek fashion, with the *cestus* ; afterwards they put on armour, and try sword and shield.'

'He is a proper man, this Lydon ; and the women, I am sure, are on his side.'

'So are not the experienced betters ; Clodius offers three to one against him.'

While the ladies were thus conversing, the first formalities of the show were over. The combatants were now arranged in pairs, as agreed beforehand ; their weapons examined ; and the grave sports of the day commenced amidst the deepest silence—broken only by an exciting and preliminary blast of warlike music.

It was often customary to begin the sports by the most cruel of all, and some *bestiarius*, or gladiator appointed to the beasts, was slain first, as an initiatory

sacrifice. But in the present instance, the experienced Pansa thought it better that the sanguinary drama should advance, not decrease, in interest; and, accordingly, the execution of Olinthus and Glaucus was reserved for the last. It was arranged that two horsemen should first occupy the arena; that the foot gladiators, paired off, should then be loosed indiscriminately on the stage; that Glaucus and the lion should next perform their part in the bloody spectacle; and the tiger and the Nazarene be the grand finale. And, in the spectacles of Pompeii, the reader of Roman history must limit his imagination, nor expect to find those vast and wholesale exhibitions of magnificent slaughter with which a Nero or a Caligula regaled the inhabitants of the Imperial City. The Roman shows, which absorbed the more celebrated gladiators, and the chief proportion of foreign beasts, were indeed the very reason why, in the lesser towns of the empire, the sports of the amphitheatre were comparatively humane and rare; and in this, as in other respects, Pompeii was but the miniature, the microcosm of Rome. Still, it was an awful and imposing spectacle, with which modern times have, happily, nothing to compare: a vast theatre, rising row upon row, and swarming with human beings, from fifteen to eighteen thousand in number, intent upon no fictitious representation—no tragedy of the stage—but the actual victory or defeat, the exultant life or the bloody death, of each and all who entered the arena!

There were now on the arena six combatants: Niger and his net, matched against Sporus with his short broadsword; Lydon and Tetraides, each armed



THE TWO GLADIATORS FROM ROME

only with a heavy Greek *cestus*—and two gladiators from Rome, clad in complete steel, and evenly matched with immense bucklers and pointed swords.

The initiatory contest between Lydon and Tetraides being less deadly than that between the other combatants, no sooner had they advanced to the middle of the arena than, as by common consent, the rest held back, to see how that contest should be decided, and wait till fiercer weapons might replace the *cestus*, ere they themselves commenced hostilities.

No persons could, at first glance, have seemed less evenly matched than the two antagonists. Tetraides, though not taller than Lydon, weighed considerably more ; the natural size of his muscles was increased, to the eyes of the vulgar, by masses of solid flesh ; for, as it was a notion that the contest of the *cestus* fared easiest with him who was plumpest, Tetraides had encouraged to the utmost his hereditary predisposition to stoutness. But Lydon, except that he was slender even almost to meagreness, was beautifully and delicately proportioned ; and the skilful might have perceived that, with much less compass of muscle than his foe, that which he had was more seasoned—iron and compact.

'Guard thyself !' growled Tetraides, moving nearer and nearer to his foe, who rather shifted round him than receded.

Lydon did not answer, save by a scornful glance of his quick, vigilant eye. Tetraides struck—it was as the blow of a smith on a vice ; Lydon sank suddenly on one knee—the blow passed over his head. Not so harmless was Lydon's retaliation : he quickly sprung to his feet, and aimed his *cestus* full on the

broad breast of his antagonist. Tetraides reeled—the populace shouted.

'You are unlucky today,' said Lepidus to Clodius: 'you will lose your bet.'

'By the gods! my bronzes go to the auctioneer if that is the case. I have no less than a hundred sestertia upon Tetraides. Ha ha! see how he rallies! That was a home stroke: he has cut open Lydon's shoulder—Tetraides!—Tetraides!'

'But Lydon is not disheartened. By Pollux! how well he keeps his temper. See how dexterously he avoids those hammer-like hands!—dodging now here, now there—circling round and round. Ah, poor Lydon! he had it again.'

'Three to one still on Tetraides! What say you, Lepidus?'

'Well, nine sestertia to three—be it so! What! again, Lydon? He stops—he gasps for breath. By the gods, he is down! No, he is again on his legs. Brave Lydon! Tetraides is encouraged—he laughs loud—he rushes on him.'

'Fool—success blinds him—he should be cautious. Lydon's eye is like the lynx's!' said Clodius, between his teeth.

'Ha, Clodius! saw you that? Your man totters! Another blow—he falls—he falls!'

'Earth revives him, then. He is once more up; but the blood rolls down his face.'

'By the thunder! Lydon wins it. See! how he presses on him! That blow on the temple would have crushed an ox! It *has* crushed Tetraides. He falls again—he cannot move—*habet*!—*habet*!'

The interest was next attracted towards the combat of Niger with Sporus, for this species of contest, from the fatal result which usually attended it and from the great science it required in either antagonist, was always peculiarly inviting to the spectators.

They stood at a considerable distance from each other. The singular helmet which Sporus wore (the vizor of which was down) concealed his face ; but the features of Niger attracted a fearful and universal interest from their compressed and vigilant ferocity. Thus they stood for some moments, each eyeing each, until Sporus began slowly, and with great caution, to advance, holding his sword pointed, like a modern fencer's, at the breast of his foe. Niger retreated as his antagonist advanced, gathering up his net with his right hand, and never taking his small glittering eye from the movements of the swordsman. Suddenly, when Sporus had approached nearly at arm's length, the *retiarius* threw himself forward, and cast his net. A quick inflection of body saved the gladiator from the deadly snare ; he uttered a sharp cry of joy and rage, and rushed upon Niger ; but Niger had already drawn in his net ; thrown it across his shoulders, and now fled round the lists with a swiftness which the other in vain endeavoured to equal. The people laughed and shouted aloud, to see the ineffectual efforts of the broad-shouldered gladiator to overtake the flying giant.

Niger having now suddenly paused, again cast his net, and again unsuccessfully. He had not retreated this time with sufficient agility—the sword of Sporus had inflicted a severe wound upon his right leg ; and, incapacitated to fly, he was pressed hard by the fierce swordsman. His great height and length of

arm still continued, however, to give him no despicable advantages ; and steadily keeping his trident at the front of his foe he repelled him successfully for several minutes. Sporus now tried, by great rapidity of evolution, to get round his antagonist, who necessarily moved with pain and slowness. In so doing, he lost his caution—he advanced too near to the giant—raised his arm to strike, and received the three points of the fatal spear full in his breast ! He sank on his knee. In a moment more, the deadly net was cast over him, he writhed mutely beneath the fresh strokes of the trident—his blood flowed fast through the net and redly over the sand. He lowered his arm in acknowledgement of defeat.

The conquering *retiarius* withdrew his net, and leaning on his spear, looked to the audience for their judgement. Slowly, too, at the same moment, the vanquished gladiator rolled his dim and despairing eyes round the theatre. From row to row, from bench to bench, there glared upon him merciless and unpitying eyes.

Hushed was the roar—the murmur ! The silence was dread, for in it was no sympathy ; not a hand—no, not even a woman's hand—gave the signal of charity and life ! Sporus had never been popular in the arena ; and lately the interest of the combat had been excited on behalf of the wounded Niger. The people were warmed into blood—the mimic fight had ceased to charm ; the interest had mounted up to the desire for sacrifice and the thirst for death !

The gladiator felt that his doom was sealed : he uttered no prayer—no groan. The people gave the signal of death ! In dogged but agonized submission, he bent his neck to receive the fatal stroke. The

blade glittered brightly in the air—fell—and the gladiator rolled upon the sand ; his limbs quivered—were still : he was a corpse.

His body was dragged at once from the arena through the gate of death, and thrown into the gloomy den termed technically the *spoliarium*. And ere it had well reached that destination, the strife between the remaining combatants was decided. The sword of Eumolpus had inflicted the death-wound upon the less experienced combatant. A new victim was added to the receptacle of the slain.

Throughout that mighty assembly there now ran a universal movement : the people breathed more freely, and resettled themselves in their seats. A grateful shower was cast over every row from the concealed conduits. In cool and luxurious pleasure they talked over the late spectacle of blood. Rich perfumes were wafted around the theatre ; the attendants sprinkled fresh sand.

'Bring forth the lion and Glaucus the Athenian,' said Pansa.

And a deep and breathless hush of overwrought interest, and intense (yet, strange to say, not unpleasing) terror lay, like a mighty and awful dream, over the assembly.

Glaucus and Olinthus had been placed together in that gloomy and narrow cell in which the criminals of the arena awaited their last and fearful struggle. Their eyes, of late accustomed to the darkness, scanned the faces of each other in this awful hour, and by that dim light, the paleness which chased away the natural hues from either cheek, assumed a

yet more ashy and ghastly whiteness. Yet their brows were erect and dauntless, their limbs did not tremble, their lips were compressed and rigid. The religion of the one, the pride of the other, the conscious innocence of both, and it may be, the support derived from their mutual companionship, elevated the victim into the hero.

The door swung back—the gleam of spears shot along the walls.

'Glaucus the Athenian, thy time has come,' said a loud and clear voice; 'the lion awaits thee.'

Glaucus did not reply, and the officers proceeded to anoint his body, completely naked save for a cincture round the loins, placed the *stilus* (vain weapon!) in his hand, and led him into the arena.

The lion had been kept without food for twenty-four hours, and the animal, during the whole morning, had testified a singular and restless uneasiness, which the keeper had attributed to the pangs of hunger. Yet its bearing seemed rather that of fear than of rage; its roar was painful and distressed; it hung its head, snuffed the air through the bars, then lay down, started again, and again uttered its wild and far-resounding cries. And now, in its den, it lay utterly dumb and mute, with distended nostrils forced hard against the grating.

Glaucus had bent his limbs so as to give himself the firmest posture at the expected rush of the lion, with his small and shining weapon raised on high, in the faint hope that one well-directed thrust (for he knew that he would have time but for one) might penetrate through the eye to the brain of his grim foe.

But, to the unutterable astonishment of all, the

beast seemed not even aware of the presence of the criminal.

At the first moment of its release it halted abruptly in the arena, raised itself half on end, snuffing the upward air with impatient sighs ; then suddenly it sprang forward, but not on the Athenian. At half-speed it circled round and round the space, turning its vast head from side to side with an anxious and perturbed gaze, as if seeking only some avenue of escape ; once or twice it endeavoured to leap up the parapet that divided it from the audience, and on failing, uttered rather a baffled howl than its deep-toned and kingly roar. It evinced no sign either of wrath or hunger ; its tail dropped along the sand instead of lashing its gaunt sides ; and its eye, though it wandered at times to Glaucus, rolled again listlessly from him. At length, as if tired of attempting to escape, it crept with a moan into its cage, and once more laid itself down to rest.

The first surprise of the assembly at the apathy of the lion was soon converted into resentment at its cowardice ; and the populace already merged their pity for the fate of Glaucus into angry compassion for their own disappointment.

Pansa called to the keeper.

'How is this ? Take the goad : prick him forth, and then close the door of the den.'

As the keeper, with some fear, but more astonishment, was preparing to obey, a loud cry was heard at one of the entrances of the arena ; there was a confusion, a bustle—voices of remonstrance suddenly breaking forth, and suddenly silenced at the reply. All eyes turned in wonder at the interruption, towards the quarter of the disturbance ; the crowd gave

way and suddenly Sallust appeared on the senatorial benches, his hair dishevelled—breathless, heated, half exhausted. He cast his eyes hastily round the ring. 'Remove the Athenian,' he cried; 'haste—he is innocent! Arrest Arbaces the Egyptian—*he* is the murderer of Apæcides!'

'Art thou mad, Sallust!' said the prætor, rising from his seat. 'What means this raving?'

'Remove the Athenian! Quick! or his blood be on your head. Prætor, delay, and you answer with your own life to the emperor! I bring with me the eye-witness to the death of the priest Apæcides. Room there! Stand back! Give way! People of Pompeii, fix every eye upon Arbaces—there he sits! Room there for the priest Calenus!'

Pale, haggard, fresh from the jaws of famine and of death, his face fallen, his eyes dull as a vulture's, his broad frame gaunt as a skeleton, Calenus was supported into the very row in which Arbaces sat. His releasers had given him sparingly of food; but the chief sustenance that nerved his feeble limbs was revenge!

'The priest Calenus!—Calenus!' cried the mob. 'Is it he? No—it is a dead man!'

'It is the priest Calenus,' said the prætor, gravely. 'What hast thou to say?'

'Arbaces of Egypt is the murderer of Apæcides, the priest of Isis; these eyes saw him deal the blow. It is from the dungeons into which he plunged me, it is from the darkness and horror of a death by famine, that the gods have raised me to proclaim his crime! Release the Athenian—he is innocent!'

'It is for this, then, that the lion spared him.—A miracle! a miracle!' cried Pansa.

'A miracle! a miracle!' shouted the people. 'Remove the Athenian—*Arbaces to the lion!*'

With that cry up sprang—on moved—thousands upon thousands! They rushed from the heights—they poured down in the direction of the Egyptian. In vain did the ædile command—in vain did the prætor lift his voice and proclaim the law. The people had been already rendered savage by the exhibition of blood—they thirsted for more—their superstition was aided by their ferocity. Aroused, inflamed by the spectacle of their victims, they forgot the authority of their rulers. It was one of those dread popular convulsions common to crowds wholly ignorant, half free and half servile; and which the peculiar constitution of the Roman province so frequently exhibited. The power of the prætor was as a reed beneath the whirlwind; still, at his word the guards had drawn themselves along the lower benches, on which the upper classes sat separate from the vulgar. They made but a feeble barrier: the waves of the human sea halted for a moment, to enable Arbaces to count the exact moment of his doom! In despair, and in a terror which beat down even pride, he threw a glance over the rolling and rushing crowd—when, right above them, through the wide opening which had been left in the canopy, he beheld a strange and awful apparition—he beheld—and his craft restored his courage!

He stretched his hand on high; over his lofty brow and royal features there came an expression of unutterable solemnity and command.

'Behold!' he shouted with a voice of thunder,

which stilled the roar of the crowd ; 'behold how the gods protect the guiltless ! The fires of the avenging Orcus burst forth against the false witness of my accusers ! '

The eyes of the crowd followed the gesture of the Egyptian, and beheld, with ineffable dismay, a vast vapour shooting from the summit of Vesuvius, in the form of a gigantic pinetree ; the trunk, blackness, the branches, fire !—a fire that shifted and wavered in its hues with every moment, now fiercely luminous, now of a dull and dying red, that again blazed terrifically forth with intolerable glare !

There was a dead, heart-sunken silence—through which there suddenly broke the roar of the lion, which was echoed back from within the building by the sharper and fiercer yells of its fellow beast. Dread seers were they of the Burden of the Atmosphere, and wild prophets of the wrath to come !

Then there arose on high the universal shrieks of women ; the men stared at each other, but were dumb. At that moment they felt the earth shake beneath their feet ; the walls of the theatre trembled : and, beyond in the distance, they heard the crash of falling roofs ; an instant more and the mountain-cloud seemed to roll towards them, dark and rapid, like a torrent ; at the same time, it cast forth from its bosom a shower of ashes mixed with vast fragments of burning stone ! Over the fields and vineyards, over the desolate streets, over the amphitheatre itself, far and wide, with many a mighty splash in the agitated sea, fell that awful shower !

No longer thought the crowd of justice or of Arbaces ; safety for themselves was their sole thought. Each turned to fly—each dashing, pressing, crushing,

against the other. Trampling recklessly over the fallen—amidst groans, and oaths, and prayers, and sudden shrieks, the enormous crowd vomited itself forth through the numerous passages. Whither should they fly? Some, anticipating a second earthquake, hastened to their homes to load themselves with their more costly goods, and escape while there was yet time; others, dreading the showers of ashes that now fell fast, torrent upon torrent, over the streets, rushed under the roofs of the nearest houses, or temples, or sheds—shelter of any kind—for protection from the terrors of the open air. But darker, and larger, and mightier, spread the cloud above them. It was a sudden and more ghastly Night rushing upon the realm of Noon!

SECTION 3—SPORT

Today

To those who love cricket this serio-comic account of a cricket match will be a delight, for most of us have had our own experiences of that bogey of young cricketers, the 'old player' who knows everything about the game and is never happy unless he is criticizing somebody! And even for those who are not cricketers or cricket-lovers, the story of the discomfiture of Colonel Murcher-Pringle cannot fail to bring a smile, so cleverly is the situation depicted and with such deft swift strokes of caricature are the pictures of the Colonel and his rival the Admiral drawn.

'Cricket is a funny game' indeed, and perhaps only those who have enjoyed playing it as schoolboys can understand its fascination. To others, it often seems mere madness for twenty-two otherwise normal people to spend the best part of three whole days on end doing nothing more than

standing about in the sun, occasionally chasing a bit of cork and leather struck by a bit of wood, as if life itself depended on preventing it from reaching the margin of the field, or (usually for much shorter periods) trying to hit the thing oneself. And yet, much else besides the thrill of the game has been produced through the contacts of those opposing groups of individuals with bat and ball. Not even the fiercest hater of the game can deny that it does develop qualities of character, and test them withal, as perhaps no other game does, or has been able to do.

Looking at the less serious side of the game, perhaps one of the pleasantest things about it is the readiness with which even the most ordinary match assumes an epic quality in the minds of those who are interested in it, spectators no less than players. Village cricket is in this respect not less enjoyable than college cricket or even County cricket and inter-State cricket. The thrills of your football, hockey or tennis matches are short, sharp affairs of an hour or so; the delights of cricket last at the very least for a whole afternoon, if not for a day, two days, or even three and four if the match is a really mighty contest. And not the least enjoyable hours are those spent in what appears to the non-cricketer as mere waiting about, lying under the trees near the boundary, sitting in the pavilion among old friends, or (more prosaic but hardly less satisfying) the intervals for lunch and tea to the accompaniment of cricket gossip.

A few words of explanation may be helpful as regards the match here described. It was between two English country teams which were old rivals—Besterton on the one side, captained by Sir Anstruther Oliver, and Fincham on the other, captained by George Appleby. Besterton had batted first, and a very good morning's play had put them in a strong position with 204 runs for only two wickets down. But alas for the effects of too good a lunch on the great occasion! Within two hours the whole side was skittled out for a mere 72 runs more, the Besterton total thus standing at 276 all out. George Appleby's XI, whose spirits had fallen heavily before lunch, now felt reasonably

hopeful of pulling off the match, which was just a one-day affair. Unhappily for them, they were suffering from a very serious handicap; they had had to include on their side that terrible old man, Colonel Murcher-Pringle. No doubt the Colonel had been a keen player in his time, but he was definitely rusty now, to say nothing of his age, bulk, and consequent slowness in the field. But what was far worse, he was one of those 'old players' who loved to lecture everyone else about the game, and could *not* see that he was only causing boredom or annoyance thereby. His presence in George's XI was therefore definitely a handicap—and not only because he had missed a catch in the morning. How he upset his fellow-players, quarrelled publicly with the Admiral (another old stager included in George's side), and wrecked the prospects of a grand victory, we shall now see. The story begins with the conversation that was going on among the players in the lunch interval.

RUN OUT

By J. C. Masterman

From *Fate Cannot Harm Me*

'Cricket is a funny game.' How is it possible to describe a match without using that odious remark, or to discuss a match without dragging it in? Colonel Murcher-Pringle said that cricket was a funny game; who would have thought it possible that he of all men would have missed a catch?—an offensive question which was greeted with cold and hostile silence. Sir Anstruther Oliver said that cricket was a funny game—look, said he, how the match had suddenly turned in favour of the visiting side, which looked

like having a disastrous start—but this patronizing and false *bonhomie* further exacerbated George Appleby's feelings. Monty said cricket seemed to him an extraordinarily funny game when he reflected that George Appleby had taken a wicket and he had not—a remark which George did not consider funny at all. And Cynthia Hetherington said that cricket was the funniest game of all to watch when Colonel Murcher-Pringle or Admiral Findon-Duff had to chase the ball—a remark which was fortunately drowned in the general conversation. And George, who was always a good host, refrained from saying that cricket was in no sense of the term a funny game at all ; it was a great game, and exciting and dramatic and even at times tragic—but *funny* it emphatically was not.

And yet the hour's play after lunch went far to prove that the ancient and banal remark was true after all. The bare facts were these ; at lunch-time Besterton had made 204 for two wickets, the wicket was perfect and the batsmen had laid bare in the most convincing fashion the weakness of the Fincham bowling. Yet at half past three the whole side was out for 276, and no one quite knew how it happened. Lunch helped, no doubt ; Colquhoun, replete with food and drink, made a lethargic shot in the first over after lunch and was caught at the wicket ; two batsmen trying to score too quickly were caught in the deep off George Appleby, and Merton, in response to a couple of very half-hearted appeals for leg-before-wicket, had taken the responsibility of dismissing two men. ('A mistake, Merton,' thought Monty, 'to play your trumps so early, when Boone has got three and a half hours to get even with you.') Yet even so it was difficult to explain why the Besterton side

made only seventy odd runs after luncheon, and lost eight wickets in doing so. Fincham supporters, however, observed with distress that no bowler on their side had taken more than three wickets.

George Appleby's dejection had changed to the wildest optimism.

'I really believe we ought to win this match, Monty, if we can only get a decent start. We must watch that fellow Lees while the shine's still on the ball. Now, look here, about the order. Rawstone hasn't been in luck this week, and wants to go in late, so I'm going to put him down to number seven—he'll know then whether he's got to get them quickly or sit on the splice. I shall start with you and Clerk—the boy's batted very consistently and well all the week—and of course Johnny Rashwood goes in number three. Then I'm going to put in the Colonel ; he owes us runs, by heaven, and he's more likely to make them going in high up than lower down. Then the Admiral. I've never seen him, but I believe he used to play for the Navy and I must give him a chance. After him Basil at six ; he always gets them quickly, and it's just the sort of wicket for him to make runs on—he's too impatient if the ball's turning. Then Rawstone, and then Bobby and Slingsby and Tom and myself to finish with—but really we haven't got a tail at all. We've got lots of time—I don't see a bit why we shouldn't get the runs. But don't you flick at that off-ball.'

Privately Monty considered that the morale of the side would have been improved if the Colonel had been firmly relegated to number eleven, and the Admiral—whose weight and bulk had proved unequal to the task of fielding for nearly three hundred runs

—to number ten, but it was not for him to say so. He nodded agreement and went to put on his pads.

As he played Lees's opening over, his first sensation was one of impotence and irritation. He was out of practice ; the fellow swung the ball late and had a cursedly deceptive flight ; he would be out any ball and poor old George would be sick as muck. But after a couple of overs his mood changed. He was still there, and what good fun it was anyhow—whatever happened. Nearly too late getting down on that yorker, but still alive ! That was better ! After ten minutes he had passed into a mood of almost reckless exhilaration. A half-volley went racing to the boundary—batting was sheer pleasure when shots were timed like that ! And it would be ridiculous to waste time ; his eye was in, he was on top of the bowling, and he would make runs. The score mounted with gratifying rapidity, and then, suddenly, came the catastrophe. Lees had bowled him a ball just outside the off-stump, and almost but not quite a half-volley. Monty had jumped out, got well across, and hit it in the middle of the bat. A spectator picked the ball out of the long grass behind extra-cover and threw it back to the bowler. The next ball was a shade wider, and a little shorter—the very bait which Monty had never been able to resist. He flicked at it—he had to flick at it ! Colquhoun, at second slip, took the catch with the easy confidence of a good fieldsman in full practice, and Monty, kicking himself, walked back to the pavilion. The score was 44, of which he had made 36.

Johnny Rashwood took his place. He was a stylish

and quick-scoring batsman, and he did not suffer from nerves. But though he was not nervous he was temperamental, and ill-chance had arranged that he had sat next to the Colonel as he waited for his innings. An innocent shout of 'good shot' from him during Monty's innings had elicited some pungent criticism from his companion.

'I don't call that a good shot at this stage in the innings. Renshaw is always absurdly reckless. He ought to be consolidating the position for the later batsmen, not taking risks when we need so many runs. He doesn't watch the ball long enough, or know when he ought to leave the off-ball alone. He's——'

'Good shot!' broke in Johnny in a possibly unduly aggressive tone, as Monty scored another boundary.

The Colonel flushed angrily.

'Reckless, reckless,' he observed. 'Renshaw's utterly lacking in judgement and patience. Ah! I told you so!'—for Colquhoun had just caught Monty in the slips—'Just what he deserved, and what I expected. Now don't *you* do anything foolish, young man. You've got to play very steadily for half an hour or so—there are plenty of us to get runs quickly if need be, later on. Go slow, and watch the ball.'

No advice could have been more certain to rouse Johnny's worst instincts.

'I'll teach that old man to lecture me on cricket,' he murmured as he walked to the wicket. 'Why the deuce can't he keep quiet after fielding worse than anyone on earth too.' No doubt after a couple of overs he would have recovered his equanimity, but that breathing space was not allowed him. His first

ball was a half-volley, and Johnny, jumping in to hit, put into his shot all the irritation which he had bottled up during his conversation with the Colonel. He hit it full in the middle of the bat, and it looked a six and deserved to be six, but was not—for Lees's long field, moving about five yards, caught the ball with one hand high above his head just inside the boundary.

'Bad luck,' said Basil as he came into the pavilion, 'but what a magnificent catch.'

Johnny grinned a little sheepishly; fortunately he had humour enough to laugh at himself.

'Yes, grand catch,' he said; 'the hands were the hands of Esau, but the voice, if you follow me, was the voice of Murcher-Pringle.'

* * *

The Colonel meantime had marched to the wicket, attended by Tom Appleby who was to run for him. Having by now recovered from the exertions of fielding, and having forgotten his own errors in the field, he was again at the height of his form, for it had pleased him to see the previous batsmen prove the accuracy of his forebodings. He lectured Tom, as they walked out, on the necessity of smart backing-up, he told Clerk at the other end to be careful not to run on the wicket, he took guard with elaborate fussiness, and then instructed the fielding side, quite unnecessarily, to shift the screen a couple of yards to the right. Most of his own side would cheerfully have drowned him, had opportunity offered, before he went in to bat; by the time that he prepared to take his first ball the visiting side, though not so actively hostile, would certainly not have pulled him out of the water had he chanced to fall in. But the Colonel, as George always said, was still a difficult

man to dislodge; he had a disconcerting habit of stopping the ball somehow, and of scoring an occasional single off the edge of his bat. Scoring at the rate of about a run a minute he and Clerk rather laboriously added twenty to the score; at half past four, with a quarter of an hour still to go to tea-time, the total was 65, and the bowling was beginning to lose its sting.

'Game seems to have got into a flat spin,' suggested Basil in the pavilion; but he had hardly spoken before things began to happen.

Clerk had batted very steadily, but slowly, for an hour, and he knew that he must begin to take risks if his side was not to get behind the clock. He therefore swung round at a shortish ball and tried to take four off it on the leg side. Unfortunately he hit it on the upper edge of the bat, and the ball soared up in the direction of square-leg. Even so he seemed safe enough, for there was no one fielding there—but mid-on thought otherwise. He was very fast and he had started as the shot was made. Making a great deal of ground he just reached the catch, going at full speed. But Boone, the square-leg umpire, had not observed his approach, and the fieldsman, clutching the ball, crashed into him, head against head, as the catch was made. Clerk was out, but so, in a slightly different sense, were both umpire and mid-on. The heads of both were cut, and it was obvious that they would have to go in for repairs. George Appleby came hurrying out with offers of assistance.

'I'm terribly sorry, Oliver,' he said. 'what can we do about this?'

'Oh—a bit of sticking-plaster will put them right, Appleby, and it's only ten minutes to tea-time. If you don't mind, send out a substitute to field, and

perhaps you wouldn't mind taking over the umpire's job yourself.'

'Of course I will. But, by the way, I'm afraid I've got to ask you to allow my next batsman to have a runner as well—the Admiral's leg has gone.'

'Naturally, Appleby. Let him have a runner by all means, and we'll get on with the game.'

By the time that the game was restarted there were, therefore, no less than six of the batting side (not counting Merton) on the field of play. George was acting as temporary umpire, Johnny Rashwood was fielding as substitute, the Colonel was batting at one end with Tom as his runner, and the Admiral was at the other end with Clerk in attendance. Monty noticed with amusement that Sir Anstruther, who never gave anything away, had reorganized his field in order to put Johnny at cover-point.

He turned to Cynthia, who was sitting by him.

'This is a really fine sight, Cynthia,' he remarked; 'observe the chivalry of both sides, each anxious to assist the other, and watch the gallant Admiral, determined to do his best, in spite of all physical handicaps. What does he remind you of?'

'A battleship, heavily damaged by enemy fire,' suggested Cynthia.

'Not bad. But I suggest a wooden ship; the *Fighting Temeraire* or something of that sort,

> 'Round the world if need be, and round the world again,
> With the lame duck lagging, lagging all the way.'

The Admiral was, indeed, in a somewhat battered condition, though his enthusiasm was undiminished.

In the field he had pursued the ball with praiseworthy zeal, but as he was a heavy man, and carried a good deal of fat, he had rapidly become distressed. It was some time since he had taken violent exercise, and his muscles were unequal to the strain put upon them. He had mopped his brow with a large bandana handkerchief, he had creaked in every joint as he lumbered across the field, and, shortly after lunch, in attempting to intercept a ball at mid-on he had pulled a muscle in his thigh. Through the rest of the Besterton innings he had hobbled gallantly, but now, after he had sat still for an hour, his leg had stiffened, and his movements were slow and cumbrous in the extreme. However, he waved his bat cheerfully to the Colonel as he passed him on his progress to the wicket.

'We're a couple of old crocks, Colonel,' he remarked, 'but we'll show them how to bat, what?'

'I can look after my end,' replied the Colonel with a scowl, and prepared to receive the bowling, for his runner and Clerk had crossed whilst the catch was in the air.

Lees delivered the next ball—a ball which was destined to become famous in the annals of Fincham cricket. It was just outside the off-stump, and the Colonel succeeded in hitting it, for the first time in his innings, with the middle or almost the middle of his bat, into the gap between cover and extra. A certain one or two runs, possibly four if extra-cover could not cut it off on the boundary. But the Colonel had forgotten Johnny Rashwood at cover. In that position Johnny was, so all the critics said, about as good as Jessop had been at his best. He moved swiftly and low over the ground (as in the

case of all the great cover-points his centre of gravity seemed to be low), his anticipation was uncanny, and above all he had the perfect throw for a cover-point with elbow and hand both apparently below the shoulder, and the flick of the wrist which returned the ball at lightning speed to the wicket. As the Colonel played his shot Johnny moved like a panther to the right, swooped on to the ball with no inch to spare, picked it cleanly off the grass, and was in the same movement poised to hurl it at the wicket. Meantime a confused shout had arisen from the batsmen and their runners. At the post-mortem afterwards no one agreed exactly as to the responsibility of the protagonists. Monty's account was as likely to be correct as that of anyone else. Let it be stated then, without comment. The fierce 'Run' must have come from the Colonel's throat, the thunderous 'No' from the Admiral's. 'Come on' was probably Clerk's contribution, and the anxious 'Wait' was that of Tom Appleby. Whosesoever the fault, both runners charged up the pitch, and met just in time to realize that Johnny had intercepted the ball; they hesitated and were lost.

'Run, Sir!' screamed the Colonel.

'Come back!' bellowed the Admiral.

Caught in a common panic both runners charged madly down the pitch, but both, unfortunately, in the same direction. They arrived neck and neck at the Admiral's end. A roar of delight from the crowd warned them of their situation; as though governed by some higher power both raced side by side back to the middle of the pitch. Still the Admiral thundered instructions from one end, whilst the Colonel

trumpeted inarticulate wrath from the other. The runners had both entirely lost grip of the situation; they stood helpless side by side in the middle of the pitch.

Meantime Johnny Rashwood hesitated. It was his moment, and well he knew it! All day he had suffered from the Colonel, but the time for revenge had come; he had only to flick the ball to the wicket-keeper and the Colonel was out. But was he? Just as he prepared to throw, he realized that the two runners were side by side, and it was not at all clear to him which batsman would be out if he threw to the wicket-keeper's end. And so, as they raced together to the bowler's end and then back to the middle, he still held his fire; finally he could hesitate no longer; he flung the ball to the wicket-keeper, who gently removed the bails, and George Appleby's finger went up.

'Out!' he said—rather unnecessarily.

Both the Colonel and the Admiral, however, stood firm, and each glared at the other. The Admiral spoke first.

'Bad luck, Colonel,' he said, 'I'am sorry you're out; that ends our little partnership.'

The reply was brusque and uncompromising.

'Rubbish, Admiral, it is you that has just been given out. Ridiculous how these young men lose their heads in a crisis.'

Admiral Findon-Duff was a good-tempered man but he was unused to contradiction. Insensibly he assumed the manner of the quarterdeck.

'I understand, Sir, that the umpire is there to

decide such matters. Appleby, which batsman is out ?'

'I don't know,' said George helplessly.

The Colonel snorted. 'When I was a boy we were accustomed to accept decisions in a sporting spirit ; I'm surprised, Admiral, that you should hesitate to follow the spirit as well as the letter of the law.'

Many years spent in bullying his juniors had made the Colonel careless in his methods, but now he had fairly roused an opponent in every sense worthy of him. For the Admiral, once committed to the quarrel, was determined to see it through. His chest swelled with indignation, and he hobbled down the pitch to confront his opponent.

'Colonel Murcher-Pringle,' he said in a voice hoarse with indignation, 'I shall take no notice of that gratuitous insult. But I am the senior officer present, and as such I order you to leave the field. You are out, Sir, and out you shall go.'

The red of the Colonel's face slowly acquired a purple hue.

'Seniority in the service has nothing whatever to do with the matter. I am the older man, and entitled to some consideration. And, Sir, allow me to remind you that the good of the side must be taken into account. I am firmly set—you have not commenced your innings—it is obvious that, in the interests of the side, you should retire.'

In sober truth the Colonel had made eleven—a four to leg, which he had scored in protecting his body from a fast full pitch (bowled, perhaps, not without malice) and seven singles, all scored behind the wicket with the edge of his bat. But he produced

his argument with conviction. The Admiral, however, was ready for him.

'Then, Sir,' he snapped, 'as the older man you are probably already exhausted, and in the interests of the side you should make room for younger and fresher players—I feel fit to play a long innings.'

At this moment George Appleby approached the two angry men, in the manner of one anxious to put an end to a dog-fight, but uncertain of the best method to adopt to achieve that result.

'I am going to spin a coin,' he announced in a voice which he hoped sounded firmer to others than it did to himself, 'and the one who loses the toss must go.' He spun the coin high into the air, before either had time to raise an objection.

'Tails,' shouted the Colonel.

'Tails,' roared the Admiral, a half-second after him. The coin fell to the ground, the head upwards.

'Aha, I'm afraid you've called wrong,' said the Admiral. 'Now I hope you will see the propriety of retiring.'

'What the deuce do you mean, Sir, you called "tails" yourself as well.'

'I was merely repeating your call to make sure that I had heard you correctly, and that you would not attempt to alter it,' retorted the Admiral with barefaced effrontery.

Johnny Rashwood, convinced at last that the Colonel had met his match, could scarcely forbear to cheer, but George Appleby was making another effort to settle the dispute. He was about to suggest spinning his coin again, when he noticed that Merton had left his end, and come up beside him.

'Consult the other umpire, Sir,' the butler whispered in his ear.

'Ah, yes,' George breathed a sigh of relief. 'Merton, are you able to give a decision ?'

'Yes, Sir. Colonel Murcher-Pringle is out, Sir.' Like a wounded boar, struck by another spear from a fresh angle, the Colonel turned savagely to face his new enemy.

'What do you mean, Merton, and what business is it of yours ? Keep to your end of the ground. Out ? how do you mean, out ?'

'Run out, Sir,' replied Merton with icy composure. Supported by his butler's firmness George Appleby made up his mind at last.

'I'm sorry, Colonel, you must go,' he said. 'You've been given out.'

No more could be said. Purple with rage and indignation the Colonel abandoned the struggle, and commenced his route march to the pavilion, pursued by the comments of his successful adversary, whose good humour had been wholly restored.

'Have a long whisky and soda ready for me at the end of my innings, Colonel,' he shouted. 'I shall get pretty hot out here.'

But the Colonel for once had no retort ready.

'I shall waive the two minutes' rule, Appleby,' said Sir Anstruther with ponderous humour, as Basil Paraday-Royne walked out from the pavilion.

Basil was a beautiful bat to watch, especially on a hard wicket, and he was desperately keen to impress Cynthia. He met the bowling with the middle of the bat, and contrived, not only to score three beautifully-timed fours but also to keep the bowling to himself for the next two or three overs. It was not,

therefore, until the last over before tea that the Admiral took his first ball. To the onlookers it was soon clear that he was a batsman of one shot, and one shot only. Heaving himself up, and advancing his left foot towards mid-on, he struck a mighty blow at each successive ball, irrespective of its length. The exertion was immense, the result incommensurate with the exertion. Three times he made his flail-like movement, three times he smote the air, and three times the ball missed the wicket and was taken by the wicket-keeper. Breathing more and more stertorously the Admiral smote for the fourth time and this time with better success, for the ball went first bounce over the leg boundary. A very short-lived triumph. At the fifth ball the Admiral slogged with even crookeder bat and even more mighty effort; he missed it, and all three stumps were spreadeagled.

'The glorious uncertainty of the game,' said the Admiral, entirely content with his four runs, though in point of fact nothing could have been more certain than his downfall. Together with the fielding side he hobbled in to tea.

SECTION 4—NATIONALISM

Yesterday

ALTHOUGH this famous essay of John Stuart Mill was published eighty years ago, all the arguments used in it apply equally to the conditions of our time. Indians in particular will be able readily to exclaim at many points: 'This is the case in our country', or, 'That cap fits the British'.

And indeed it is most probable that Mill himself, Liberal as he was, would have supported the claims of Indian nationalists were he to be living in our own era.

A more difficult, and a more valuable exercise, because it demands a high degree of detached judgement, is to try to see whether there are valid arguments in this essay in favour of movements with which we ourselves may not be in agreement. For example, if you are a member of a minority community, examine what Mill has to say regarding the position of such units: or, if you are interested in the Pakistan proposal, either for it or against, try to see how the arguments of Mill apply to that.

It would hardly be an exaggeration to say that the existence of many of the political movements in India today is directly due to the influence which thinkers such as Mill exerted upon our fathers and grandfathers. For the fuller understanding of the politics of today, therefore, it is useful for us to know something of the ideas of the great political thinkers of yesterday. Even this short example will show how little some of them are still out of date.

NATIONALITY AND DEMOCRACY

By John Stuart Mill

From *Representative Government*

A portion of mankind may be said to constitute a Nationality, if they are united among themselves by common sympathies—which do not exist between them and any others—which make them co-operate with each other more willingly than with other people, desire to be under the same government, and desire that it should be government by themselves or a portion of themselves, exclusively. This feeling of nationality may have been generated by various

causes. Sometimes it is the effect of identity of race and descent. Community of language and community of religion greatly contribute to it. Geographical limits are one of its causes. But the strongest of all is identity of political antecedents; the possession of a national history, and consequent community of recollections; collective pride and humiliation, pleasure and regret, connected with the same incidents in the past. None of these circumstances however are indispensable, or necessarily sufficient by themselves. Switzerland has a strong sentiment of nationality, though the cantons are of different races, different languages, and different religions. Sicily has, throughout history, felt itself quite distinct in nationality from Naples, notwithstanding identity of religion, almost identity of language, and a considerable amount of common historical antecedents. The Flemish and the Walloon provinces of Belgium, notwithstanding diversity of race and language, have a much greater feeling of common nationality, than the former have with Holland, or the latter with France. Yet in general the national feeling is proportionally weakened by the failure of any of the causes which contribute to it. Identity of language, literature, and, to some extent, of race and recollections, have maintained the feeling of nationality in considerable strength among the different portions of the German name, though they have at no time been really united under the same government; but the feeling has never reached to making the separate States desire to get rid of their autonomy. Among Italians an identity far from complete, of language and literature, combined with a geographical position which separates them by a dis-

tinct line from other countries, and, perhaps more than anything else, the possession of a common name, which makes them all glory in the past achievements in arts, arms, politics, religious primacy, science, and literature, of any who share the same designation, give rise to an amount of national feeling in the population, which, though still imperfect, has been sufficient to produce the great events now passing before us: notwithstanding a great mixture of races, and although they have never, in either ancient or modern history, been under the same government, except while that government extended or was extending itself over the greater part of the known world.

Where the sentiment of nationality exists in any force, there is a *prima facie* case for uniting all the members of the nationality under the same government, and a government to themselves apart. This is merely saying that the question of government ought to be decided by the governed. One hardly knows what any division of the human race should be free to do, if not to determine with which of the various collective bodies of human beings they choose to associate themselves. But, when a people are ripe for free institutions, there is a still more vital consideration. Free institutions are next to impossible in a country made up of different nationalities. Among a people without fellow-feeling, especially if they read and speak different languages, the united public opinion, necessary to the working of representative government, cannot exist. The influences which form opinions and decide political acts are

different in the different sections of the country. An altogether different set of leaders have the confidence of one part of the country and of another. The same books, newspapers, pamphlets, speeches, do not reach them. One section does not know what opinions, or what instigations, are in circulation in another. The same incidents, the same acts, the same system of government, affect them in different ways ; and each fears more injury to itself from the other nationalities than from the common arbiter, the State. Their mutual antipathies are generally much stronger than jealousy of the government. That any one of them feels aggrieved by the policy of the common ruler is sufficient to determine another to support that policy. Even if all are aggrieved, none feel that they can rely on the others for fidelity in a joint resistance ; the strength of none is sufficient to resist alone, and each may reasonably think that it consults its own advantage most by bidding for the favour of the government against the rest. Above all, the grand and only effectual security in the last resort against the despotism of the government is in that case wanting : the sympathy of the army with the people. The military are the part of every community in whom, from the nature of the case, the distinction between their fellow countrymen and foreigners is the deepest and strongest. To the rest of the people, foreigners are merely strangers ; to the soldier, they are men against whom he may be called, at a week's notice, to fight for life or death. The difference to him is that between friends and foes—we may almost say between fellow men and another kind of animal : for as respects the enemy, the only law is that of force, and the only mitigation, the same as in the case of

other animals—that of simple humanity. Soldiers to whose feelings half or three-fourths of the subjects of the same government are foreigners, will have no more scruple in mowing them down, and no more desire to ask the reason why, than they would have in doing the same thing against declared enemies. An army composed of various nationalities has no other patriotism than devotion to the flag. Such armies have been the executioners of liberty through the whole duration of modern history. The sole bond which holds them together is their officers, and the government which they serve ; and their only idea, if they have any, of public duty is obedience to orders. A government thus supported, by keeping its Hungarian regiments in Italy and its Italian in Hungary, can long continue to rule in both places with the iron rod of foreign conquerors.

If it be said that so broadly marked a distinction between what is due to a fellow countryman and what is due merely to a human creature, is more worthy of savages than of civilized beings, and ought, with the utmost energy, to be contended against, no one holds that opinion more strongly than myself. But this object, one of the worthiest to which human endeavour can be directed, can never, in the present state of civilization, be promoted by keeping different nationalities of anything like equivalent strength under the same government. In a barbarous state of society the case is sometimes different. The government may then be interested in softening the antipathies of the races, that peace may be preserved, and the country more easily governed. But when

there are either free institutions, or a desire for them, in any of the peoples artificially tied together, the interest of the government lies in an exactly opposite direction. It is then interested in keeping up and envenoming their antipathies ; that they may be prevented from coalescing, and it may be enabled to use some of them as tools for the enslavement of others. The Austrian Court has now for a whole generation made these tactics its principal means of government ; with what fatal success, at the time of the Vienna insurrection and the Hungarian contest, the world knows too well. Happily there are now signs that improvement is too far advanced to permit this policy to be any longer successful.

For the preceding reasons, it is in general a necessary condition of free institutions that the boundaries of government should coincide in the main with those of nationalities. But several considerations are liable to conflict in practice with this general principle. In the first place, its application is often precluded by geographical hindrances. There are parts, even of Europe, in which different nationalities are so locally intermingled that it is not practicable for them to be under separate governments. The population of Hungary is composed of Magyars, Slovaks, Croats, Serbs, Roumans, and in some districts, Germans, so mixed up as to be incapable of local separation ; and there is no course open to them but to make a virtue of necessity, and reconcile themselves to living together under equal rights and laws. Their community of servitude, which dates only from the destruction of Hungarian independence in 1849, seems to be ripening and disposing them for such an equal union. The German colony of East Prussia is cut

off from Germany by part of the ancient Poland, and being too weak to maintain separate independence, must, if geographical continuity is to be maintained, be either under a non-German government, or the intervening Polish territory must be under a German one. Another considerable region in which the dominant element of the population is German, the provinces of Courland, Esthonia, and Livonia, is condemned by its local situation to form part of a Slavonian state. In Eastern Germany itself there is a large Slavonic population: Bohemia is principally Slavonic; Silesia and other districts partially so. The most united country in Europe, France, is far from being homogeneous; independently of the fragments of foreign nationalities at its remote extremities, it consists, as language and history prove, of two portions, one occupied almost exclusively by a Gallo-Roman population, while in the other the Frankish, Burgundian, and other Teutonic races form a considerable ingredient.

Whatever really tends to the admixture of nationalities, and the blending of their attributes and peculiarities in a common union, is a benefit to the human race: not by extinguishing types, of which, in these cases, sufficient examples are sure to remain, but by softening their extreme forms, and filling up the intervals between them. The united people, like a crossed breed of animals (but in a still greater degree, because the influences in operation are moral as well as physical), inherits the special aptitudes and excellencies of all its progenitors, protected by the admixture from being exaggerated into the neighbouring

vices. But to render this admixture possible, there must be peculiar conditions. The combinations of circumstances which occur, and which affect the result, are various.

The nationalities brought together under the same government may be about equal in numbers and strength, or they may be very unequal. If unequal, the least numerous of the two may either be the superior in civilization, or the inferior. Supposing it to be superior, it may either, through that superiority, be able to acquire ascendancy over the other, or it may be overcome by brute strength, and reduced to subjection. This last is a sheer mischief to the human race, and one which civilized humanity with one accord should rise in arms to prevent. The absorption of Greece by Macedonia was one of the greatest misfortunes which ever happened to the world: that of any of the principal countries of Europe by Russia would be a similar one.

If the smaller nationality, supposed to be the more advanced in improvement, is able to overcome the greater, as the Macedonians, reinforced by the Greeks, did Asia, and the English India, there is often a gain to civilization; but the conquerors and conquered cannot in this case live together under the same free institutions. The absorption of the conquerors in the less advanced people would be an evil: these must be governed as subjects, and the state of things is either a benefit or a misfortune according as the subjugated people have or have not reached the state in which it is an injury not to be under a free government, and according as the conquerors do or do not use their superiority in a manner calculated to fit the conquered for a higher stage of improvement.

When the nationality which succeeds in overpowering the other is both the most numerous and the most improved—and especially if the subdued nationality is small, and has no hope of reasserting its independence—then, if it is governed with any tolerable justice, and if the members of the more powerful nationality are not made odious by being invested with exclusive privileges, the smaller nationality is gradually reconciled to its position, and becomes amalgamated with the larger. No Bas-Breton, nor even any Alsatian, has the smallest wish at the present day to be separated from France. If all Irishmen have not yet arrived at the same disposition towards England it is partly because they are sufficiently numerous to be capable of constituting a respectable nationality by themselves ; but principally because, until of late years, they had been so atrociously governed, that all their best feelings combined with their bad ones in rousing bitter resentment against the Saxon rule. This disgrace to England, and calamity to the whole empire, has, it may be truly said, completely ceased for nearly a generation. No Irishman is now less free than an Anglo-Saxon, nor has a less share of every benefit either to his country or to his individual fortunes, than if he were sprung from any other portion of the British dominions. The only remaining real grievance of Ireland, that of the State Church, is one which half, or nearly half, the people of the larger island have in common with them. There is now next to nothing, except the memory of the past, and the difference in the predominant religion, to keep apart two races, perhaps the most fitted of any two in the world to be the completing counterpart of one another. The con-

sciousness of being at last treated not only with equal justice but with equal consideration, is making such rapid way in the Irish nation, as to be wearing off all feelings that could make them insensible to the benefits which the less numerous and less wealthy people must necessarily derive from being fellow citizens instead of foreigners to those who are not only their nearest neighbours, but the wealthiest and one of the freest, as well as most civilized and powerful, nations of the earth.

The cases in which the greatest practical obstacles exist to the blending of nationalities are when the nationalities which have been bound together are nearly equal in numbers and in the other elements of power. In such cases, each, confiding in its strength, and feeling itself capable of maintaining an equal struggle with any of the others, is unwilling to be merged in it: each cultivates with party obstinacy its distinctive peculiarities; obsolete customs, and even declining languages, are revived, to deepen the separation; each deems itself tyrannized over if any authority is exercised within itself by functionaries of a rival race; and whatever is given to one of the conflicting nationalities is considered to be taken from all the rest. When nations, thus divided, are under a despotic government which is a stranger to all of them, or which, though sprung from one, yet feeling greater interest in its own power than in any sympathies of nationality, assigns no privilege to either nation, and chooses its instruments indifferently from all; in the course of a few generations, identity of situation often produces harmony of feel-

ing, and the different races come to feel towards each other as fellow countrymen ; particularly if they are dispersed over the same tract of country. But if the era of aspiration to free government arrives before this fusion has been effected, the opportunity has gone by for effecting it. From that time, if the unreconciled nationalities are geographically separate, and specially if their local position is such that there is no natural fitness or convenience in their being under the same government (as in the case of an Italian province under a French or German yoke), there is not only an obvious propriety, but, if either freedom or concord is cared for, a necessity, for breaking the connexion altogether. There may be cases in which the provinces, after separation, might usefully remain united by a federal tie : but it generally happens that if they are willing to forgo complete independence and become members of a federation, each of them has other neighbours with whom it would prefer to connect itself, having more sympathies in common if not also greater community of interest.

SECTION 4—NATIONALISM

Today

It is probably the guilty conscience of a conquering people which leads them to assert—and to try to maintain their assertion with supposedly scientific reasoning—that they are a superior race. The Germans were not by any means the first to lay claim to being a *Herrenvolk* or master-race. We do not hear much in these days about 'the white man's burden', but the phrase is not forgotten. The Japanese attempt to enforce their domination upon the whole of East

Asia is based upon not dissimilar convictions. Likewise, within the boundaries of our own country, there was the outcry about Brahmin rule. And even the otherwise broad-minded Greeks were not above thinking that the vast majority of non-Greeks were just barbarians.

It is like a fresh breeze pouring into a dark and stuffy room, therefore, when genuine Science is brought to bear upon this miasma of prejudice and pride, sweeping clean away the dusty cobwebs of false argument. For those of us who have been groping in such a gloom, the breeze may seem almost too chill at first; but its shock will prove a tonic. And Dr Julian Huxley, Secretary of the Zoological Society of London, with his co-author, Mr A. C. Haddon, are the right persons to administer it. The style of their book *We Europeans* is as stimulating as the ideas they put across.

RACIALISM AND SCIENCE

By Julian Huxley and A. C. Haddon

From *We Europeans*

'Racial problems' are among the urgent actualities of twentieth-century politics. But as soon as we subject the concept underlying them, that of *race*, to dispassionate analysis, it turns out to be a pseudo-scientific rather than a scientific term. In other words, its use implies an appeal to the accuracy and to the prestige of science; but on investigation it turns out to have no precise or definable meaning. Further, like other pseudo-scientific terms, it can then readily be employed to rationalize emotion, and to bolster up the appeals of prejudice, by giving it a meaning to suit the context.

The term 'race' is currently used in several quite different senses. In the first place, it is used to denote one of the major divisions of mankind—black, white, yellow, and brown. Secondly, it is used to denote the actual human material of a particular country, group, or nation and its biologically transmissible characteristics: for instance, even the most ardent upholders of the Nordic theory cannot mean by the 'British race' anything more than the actual inhabitants of Great Britain and their descendants overseas. Thirdly, it is used to denote a hypothetical 'pure race' which is taken to have existed in the past and later to have become contaminated by admixture with foreign elements: this, for instance, lies behind the idea of the 'Germanic race'. Fourthly, it is sometimes used as equivalent to a recognizable or supposedly recognizable physical type, as Arab, Irish, etc. Fifthly, it is occasionally applied to a local population which by reason of isolation, or supposed isolation, has become or is supposed to have become fairly uniform and stable in physical type—for example, the 'Cornish race'. Sixthly, it is also sometimes used in a wholly inadmissible sense to denote the peoples who speak a certain type of language: for example, in such a phrase as 'the Aryan race', the 'Latin races'.

On all these uses, scientific analysis, backed by the results of modern genetics, throws a pitiless light.

It is probable that during the early evolution of our species, it became divided up into geographical varieties, each more or less isolated from the others, and each evolving so as to become adapted to its

climatic environment. The black variety adapted to hot climates, the yellow variety to dry conditions, and the white variety to north-temperate latitudes, are the most prominent examples.

Such varieties would then correspond to the 'geographical races', or *sub-species* as they are now generally called, to be found in many animal species. If we wish to retain the term *race* for such groups, they should be called 'primary races'. However, since the term race has been largely abandoned in zoology, and since in anthropology it is used in such a confusing multiplicity of senses, we had better employ the term *primary sub-species*. But—and this cannot be too strongly emphasized—such primary human sub-species are entirely hypothetical, a matter of inference only. Man's incurable and increasing propensity to wander over the face of the globe had effected a thorough mixing between the hypothetical primary sub-species long before the dawn of the historic period had blurred the sharpness of their outlines and in some cases made it all but impossible to deduce their original type. A typical white man is very different from a typical Chinese or a typical Negro. But white is connected with black and also with yellow through every gradation of type, and in each case along several distinct main lines of crossing. Again, the simple classifications which at first suggest themselves all break down at one or another point. For instance, the Australians, though deeply pigmented and undoubtedly primitive in many ways, show the same character of hair as Europeans. We cannot with certainty assign them to a definite original sub-species. No single scheme of classification, in point of fact, has been devised which will

provide a satisfactory pigeon-holing for the various human types in existence.

It is here that genetics steps in. The modern study of heredity, based on Mendel's great discoveries, has shown that after a cross between two distinct strains, blending inheritance, such as used to be assumed by anthropologists, does not occur, but that all kinds of different combinations of the original characters of the two stocks are brought into being. This is due to the fact that hereditary transmission is by means of discrete living particles, called *genes*, which reproduce themselves, and can be recombined in the most various ways.

Accordingly, if two primary sub-species meet and mix, their characteristics may be combined in their descendants. Originally, black skin might invariably have gone with flat nose and thick lips. That, however, provides not the slightest reason why it should always do so. After a cross with a stock with light pigmentation and delicate features, the combination of dark skin and delicate features may occur. Since dark skin is an advantage in low latitudes, such a new combination of characters has, it appears, been favoured in several instances of actual crossing, notably, for instance, in India.

Similarly yellow skin and a round head seem to have been originally associated. But the two become uncoupled with the greatest facility after crossing with strains possessing different head-form and skin-colour.

Another result of the existence of definite genes as the carriers of hereditary constitution is that after a cross the resulting population will not tend to a mere average between the two original ingredients, but will,

in the absence of social or natural selection, continue to produce a great diversity of types, generation after generation. There is not the slightest tendency for the population of Britain to become all medium brown in hair-colour, nor for that of Germany to become all medium long in skull-shape. In each generation black and yellow hair, long and round heads, continue to be produced, and to be produced in about the same percentage of the population.

It will now be clear why no single scheme of classification can satisfactorily pigeon-hole all known human types, or even deduce without danger of error the number and characteristics of the original 'primary races' of man. Whereas in the evolution of animals there is a constant branching, each branch being permanently isolated after a certain degree of differentiation by becoming incapable of fertile crossing with other branches, in man the branches constantly meet and unite and produce new types of shoots. The conventional ancestral tree may have some advantages for representing the descent of animal types ; it is wholly unsuitable and misleading for man. Further, while, in general, animal types can be reasonably classified on the basis of using degrees of resemblance to indicate degrees of relationship, no such simple scheme will serve for man. In fact, with a species in which inter-crossing of divergent types is so prevalent as our own, *no* simple system of classification can ever be devised to represent the realities of the situation.

Before proceeding further, there are one or two other popular fallacies to be noted. One is the mis-

conception that a 'race' is a collection of people all descended from a single original couple. This idea seems to spring largely from the family trees beloved of genealogists, in which a family is traced back to a single founder and his wife. Such family trees in reality trace the descent of a name, and have little to do with biological heredity: they are social, not genetic, documents. On the genetic plane, the idea of descent from a single couple is in any case vitiated for man by the amount of inter-crossing which has taken place between groups. Our ancestry will diverge as well as converge as we trace it back. With animal evolution, in tracing back the pedigree of a group you will, it is true, find convergence of separate branches (species, genera, etc.) to a common stem. But this is not the same thing as convergence to a common ancestral pair; and as a matter of fact we can be certain that the common stem is always a large body of individuals, with a certain degree of genetic variability. Change in evolution does not take place through the sudden appearance of a new sport in a single couple, who then become the ancestors of the new species or strain; it occurs by means of the spread of mutant genes through the population. The evolving strain is the whole population of a given area.

Another and even more serious misconception is that language is any criterion of 'race'. There are a great many examples in history of a conquering people forcing its language on the conquered; and also a great many examples of the converse process, of the conquering invaders adopting the language of the country they have invaded. It is thus quite improper to speak of the 'Celtic race'. There is a group of Celtic-speaking peoples, but the fact of their

all speaking Celtic is no proof of common descent or genetic affinity. Similarly there is not and cannot be such a thing as an Aryan race, since the term Aryan refers to language.

This fallacy with regard to language is a particular case of a similar fallacy with regard to social culture in general. Habits, traditions, machines, dress, art, institutions, gestures, ideas—all these as well as language are part of the social environment of human beings. They are not inborn, but have to be learnt or built up by experience. None of these can serve as any criterion of racial affinity between peoples. For instance, if we had nothing to go by but specimens of machinery and other material objects, we might conclude that the modern Japanese were much more closely related to the Europeans than to the Tibetans or other Mongol peoples: we should, however, be wrong. Culture, both material and spiritual, can spread by culture-contact, whereas physical characters can only spread by actual inter-crossing.

Nor can the cultural level of a people serve as evidence of its innate ability or the reverse. The ancient Romans, perfectly correctly, regarded the inhabitants of this country and of Germany as uncivilized. They would have been considerably surprised to find them leading the way in civilization a mere fifty or sixty generations later. In ancient Greece, some very eminent philosophers went further and ascribed to the northern 'barbarians' an innate incapacity to rise to the attainments of the Greeks. They were confusing cultural level with innate capacity. The rapid rise of Arab culture to a high intellectual level and its subsequent fall and stagnation is another example. We must ourselves beware of

falling into the same fallacy as regards the so-called 'backward peoples' of the modern world.

On *a priori* grounds we may expect differences in innate ability to exist between different peoples. But achievement by itself is no guide ; and so far no satisfactory method has been devised of testing differences in innate intelligence or other psychological qualities between peoples with very different education and culture. The differences in social environment override the differences in genetic equipment.

Finally there is the fallacy which equates 'race' with 'nation'. Here again there is confusion between a genetic and a social concept, but the case demands special treatment because of the special dangers inherent in this particular fallacy. The most obvious way of demonstrating that it is a fallacy is to consider the United States of America. There is, very definitely, an American nation, whose nationalism has indeed been growing more pronounced during the last few decades ; but equally definitely, there is no possibility of speaking of an American race. Rather the popular phrase so often applied to the United States of America, *the melting-pot of race,* displays the true situation. All great nations are 'melting-pots of race', but America affords the most obvious example. A nation is a group of people with a common tract of country, bound together in a common State by common history, common sentiment and traditions, common social organization, and usually (though not always, as, for example, Belgium or Switzerland) by common language. It is also bound together by being the unit to which the individual belongs, so that he regards other individuals belonging to the same unit as in some way allied with him, while individuals

belonging to other similar units are 'foreigners', in some way alien to him. This sense of solidarity with co-nationals and of separateness from other nationals is of the essence of nationality. The nation, however, is a particular phase in the evolution of human groups, not anything permanent or inherent in human nature. It is in essentials a product of the three hundred years, and quite different in nature and organization from other units of the same general type, such as clan, tribe, city-state, or empire. The idea of the 'blood-tie' has been used to strengthen national sentiment because of the importance of such sentiment for unity and effectiveness in war. But mass-migration and military conquest, and the adoption of foreigners into the group by legal change of citizenship and by marriage, when the wife and children follow the father's nationality, make the thesis of common descent impossible to uphold. The idea of a British, a French, a German, or an Italian 'race' is a political fiction, and a dangerous one at that.

Coming down from the general to the particular, we can here deal with two so-called 'race' problems which are of immediate political importance—the Nordic and the Jewish. Beginning with the latter, we find that the Jewish problem is far less a 'racial' or genetic than a cultural one. The Jews are no more a distinct' sharply-marked 'race' than are the Germans or the English. They are originally of mixed descent. During their dispersal they have interbred with the surrounding populations, so that a number of genes derived from the immigrant Jews are scattered through the general population, and the

Jewish communities have come to resemble the local population in many particulars. In this way the Jews of Africa, of eastern Europe, of Spain and Portugal, and so on, have become markedly different from each other in physical type. What they have preserved and transmitted is not 'racial qualities', but religious and social traditions. The Jews do not constitute a definite race, but a society forming a pseudo-national group with a strong religious basis and with peculiar historic traditions. Biologically it is almost as illegitimate to speak of a 'Jewish race' as of an Aryan race'.

The Nordic theory is in another category. Instead of ascribing racial qualities to a group which is today essentially held together on a cultural basis, it takes a hypothetical past 'race', ascribes to it a number of valuable qualities, notably initiative and leadership, and then, whenever it finds such qualities in the mixed national groups, ascribes them to the Nordic elements in the population. It then goes further, and sets up as a national idea a return to purity of Nordic stock.

The facts of the case are as follows. The Nordic race, like other human races, has no present existence. Its former existence, like that of all 'pure races', is hypothetical. There does, however, exist a Nordic type. This occurs with only a moderate degree of mixture in parts of Scandinavia, and is also to be found, but much mixed with other types, so that all intermediates and recombinations occur, in northern Europe from Britain to Russia, with pockets here and there in other countries. On various grounds we can be reasonably sure that this distribution is the result of the invasion of Europe by a group largely composed of men of this type—perhaps in the degree

of purity in which the type is now found in parts of Scandinavia. This group was the 'Nordic race'—a secondary sub-species in our sense. It is not certain where it originated or when its important migration took place, but most authorities believe that it came originally from the steppes of southern Russia.

But besides these facts and deductions, there exists what one can only characterize as a Nordic myth, ascribing to this 'Nordic race' most of the great advances of mankind during recorded history, and asserting that their qualities of leadership fit them to rule over other races. The Aryan and Germanic myths are variants on the same theme.

These contentions appear to be based on nothing more serious than self-interest and wish-fulfilment. In the first place, it is quite certain that the great steps in civilization, when man learned to plough, to write, to build stone houses, to transport his goods in wheeled vehicles, were first taken in the near East, by peoples who by no stretch of imagination could be called Nordic, but who seem in point of fact to have been largely of the dark, Mediterranean type. Secondly, it is true that great advances in civilization have sometimes been observed in history when invaders of a relatively light-skinned type have irrupted into countries populated by other groups—notably in Greece, though here round-headed as well as long-headed elements were included in the invaders. But in such cases, both types appear to have made their contribution, and the result can be ascribed to the vivifying effects of mixture and culture-contact with as much propriety as to the inherent qualities of one of the types concerned. Indeed, where the Nordic type is most prevalent, in northern Scandinavia, there

is also found among the people a tendency to introspection, accompanied by a very high suicide-rate; this may well be an effect of the northern environment, but may equally well be a characteristic of the type or due to social conditions. Generally speaking, the greatest achievements of modern civilization have occurred in regions of the greatest mixtures of types —Italy, France, Britain, and Germany, to mention only four nations. In all these countries of 'mixed races', owing to the nature of Mendelian inheritance, it is rare to find pure Nordic types. The great bulk of the population will contain genes derived from many original sources. In a nation like Britain or Germany, the pure Nordic type is irrecoverable for the country at large: the population as a whole is an inextricable mixture. The Nordic type may be held up as an ideal, but this ideal is genetically unattainable, and will not affect the biological realities of the situation.

Furthermore, when we look into the facts of history, we find it far from established that men of pure or even approximately Nordic type have been the great leaders of thought or action. The great explorers of Britain displayed initiative, but hardly one of them was physically of Nordic type: the majority of the most celebrated Germans, including Goethe, Beethoven, and Kant, were medium- or round-headed, not long-headed like the typical Nordics. Napoleon, Shakespeare, Einstein—a dozen great names spring to mind which in themselves should be enough to disperse the Nordic myth. The word *myth* is used advisedly, since it frequently plays a semi-religious role, as basis for a creed of passionate racialism.

From what has been said, it will be clear that 'race-mixture' has in the past been beneficial. The British contain strong Nordic and Eurasiatic elements, with a definite admixture of Mediterranean types. In the Germans there is a very large Eurasiatic element which includes the Slavonic, and genes from the Mongoloid peoples have crept in via Russia. In France, the population is largely Alpine, especially in the centre, but there is a strong Nordic admixture in the north and a slighter Mediterranean one in the south. The Jews are of mixed origin, and have steadily been growing more mixed. America is proverbially a melting-pot. The Japanese are also a mixture of several ethnic types.

But this does not imply that ethnic mixture must always be good. In the above examples, we are dealing with mixture between minor sub-divisions of one 'primary race' or sub-species. What of mixture between the major sub-divisions of mankind—between black and white, for instance, or white and yellow? In this field the most violent feelings are aroused. We need only cite the strong feeling in the United States against white intermarriage with Negroes or Chinese, and in South Africa against Bantu admixture.

If the primary sub-species of man were really developed in comparative isolation, each adapted to a different main type of environment, it may be argued that to upset the adjustment brought about by thousands of years of selection is bound to produce some disharmony. Further, if it be true that some ethnic groups possess a low average level of innate intelligence, to allow crosses between them and more intelligent types is a retrograde step.

These objections undoubtedly have some validity.

There are, however, arguments on the other side. Even if wide crosses should produce some disharmonic or maladjusted types, this will occur as the result of the great variability induced by such crosses; and this same variability may be expected to throw up also some exceptionally well-endowed types. Again, that types were well adapted in the past does not imply that new types may not be better adapted to the wholly new environments which man is ever busily creating for himself, and it may well be that new combinations of characters will be needed to cope with the problems of the future.

Crosses between groups or classes of markedly different ethnic types within the same country, when they differ also in standard of living, social status, or general outlook, will have the effect of blurring the social barriers and economic distinctions between them. In certain cases, the ruling caste or class may find itself or its ideas swamped or diluted to vanishing-point; in other cases it feels impelled to guard its privileges. From a purely biological standpoint it might conceivably be a good thing to undertake mass-crossing between say the British and the Bantu, or the Americans and the Chinese, on account of the new genetic recombinations to be obtained. But the social systems involved would be unable to stand the strain. There is a limit to the amount of foreign stock which can be taken up by a nation in a given time. This is not due to the quantity of foreign genes *per se*, but to the mass of alien habits, prejudices, ideas, and resistances which have to be overcome and assimilated.

Once again the term ‘race’ proves to be misleading. The question of ‘race-mixture’ turns out not to be pri-

marily a matter of 'race' at all, but a matter of nationality, class, or social status. 'Racial crossing' may be inadvisable, but chiefly because the ethnic groups involved happen to be in different national worlds or on different cultural levels. Policy in this matter can only be determined on its economic and social merits: the biologist and the eugenist have here a negligible or at best a minor role to play as advisers. When politicians and propagandists seek to make out a purely biological case against intermarriage with such and such a people or ethnic type, we can always be sure that this is a rationalization, and the real antagonism is to be sought in some other sphere. The biological reasoning is a cloak to fling over obscure, perhaps unconscious feelings. The ethnic group thus discriminated against serves as the scapegoat for some economic fear, some class prejudice, some nationalist ambition, some cultural pride, even some 'inferiority complex'. Similar types of rationalization, with the same lack of biological validity, have been employed to justify slavery, the caste system, class oppression, religious persecution. The argument against so-called miscegenation is only one among many thrown up by groups in power to justify themselves in their own eyes or in the eyes of others.

It may well be that in many cases the discouragement of 'racial crossing' may be the correct policy. But this will be primarily because such crossing will be a symptom of culture-contact on a large scale and that this culture-contact is in danger of bringing about economic or cultural changes which are undesirable, either in themselves or as a matter of

immediate policy. In such cases it is desirable so far as is possible to hinder intermarriage and extra-marital intercourse, which might be done by preventing culture-contact on a large scale.

So long as nationalist ideas, even in modified form, continue to dominate the world scene, the large-scale segregation of areas, each developing their own general type of culture, may be the policy to pursue. If unrestricted immigration seems likely to upset such a policy, restriction is justifiable, as with Asiatic races in Australia and the United States. But do not let us in such cases make it a question of 'race', or become mystical on the subject, or justify ourselves on false biological grounds.

Such considerations, however, apply only to major differences of type and culture. Within a single main ethnic group or cultural area they are irrelevant. Notably in Europe, both ethnic inter-crossing and culture-contacts have proceeded so far that 'racial purity', like complete isolationism or self-sufficiency, is impossible of attainment. And because they are impossible to attain, they are dangerous to aim at: as an ideal, they contain unrealities and impossibilities which may destroy essential realities and thwart true possibilities.

The violent racialism to be found in Europe today is a symptom of Europe's exaggerated nationalism: it is an attempt to justify nationalism on a non-nationalist basis, to find a firm basis in objective science for ideas and policies which are generated internally by a particular economic and political system, and have real relevance only in reference to that system. The cure for the racial mythology, with its accompanying self-exaltation and persecution of

others, which now besets Europe, is a reorientation of the nationalist ideal, and, in the practical sphere, an abandonment of claims by nations to absolute sovereign rights. Meanwhile, however, science and the scientific spirit can do something by pointing out the biological realities of the ethnic situation, and by refusing to lend her sanction to the absurdities and the horrors perpetrated in her name. Racialism is a myth, and a dangerous myth at that. It is a cloak for selfish economic aims which in their uncloaked nakedness would look ugly enough. And it is not scientifically-grounded. The essence of science is the appeal to fact.

SECTION 5—WAR

Yesterday

SURELY there can be very few people in the world nowadays who agree with Mussolini that '*War alone brings up to its highest tension all human energy, and puts the stamp of nobility upon the peoples who have the courage to meet it. All other trials are substitutes*'; and perhaps the events of the past years have caused even Il Duce to revise his views on the subject. It is undoubtedly true that, as the pacifists say, 'War settles nothing', if by the word 'settle' is meant the removal of a cause of friction and hate. But it cannot be denied that, as we live in a world where war occurs at frequent intervals, there have been certain 'decisive battles', decisive not simply in a military sense, but in the sense that, if the outcome had been otherwise than what it was, the history of mankind would have taken quite a different turn. In India's history Panipat has thrice, if not four times, been the scene of such decisions. Talikota might be cited as a similar case. The battle of Tours,

where the Muslims were checked in their invasion of Europe, and the battle of Chalons where Attila the Hun met his fate, were equally decisive. These were in every case turning-points at which it was settled whether one form of civilization or its rival should prevail for centuries to come. In no instance was the decision more far-reaching than that which was arrived at as a result of the battle of Marathon.

Marathon (490 B.C.) seems indeed a very far-distant 'yesterday', but had victory gone to the Persians, we should be living in a different world today—a world in which the influence of the Greeks and all that they stand for would be absent. It is a fascinating amusement to speculate what sort of a world that might be. Darius I, the ruler of the greatest empire the Middle East has ever seen, stretching from the Nile to the Indus, was an able administrator, not merely a conqueror and a tyrant. Eurasia might have enjoyed law and order under a *pax persica* at least five hundred years before it came under the *pax romana*. Whether such a peace would have given to the world a Plato and an Aristotle, it is impossible to say; but it certainly would not have produced a Pericles and a Parthenon in Athens. And our own world would surely be the poorer without the influence of Greek art, and the Greek ideas of liberty and democracy.

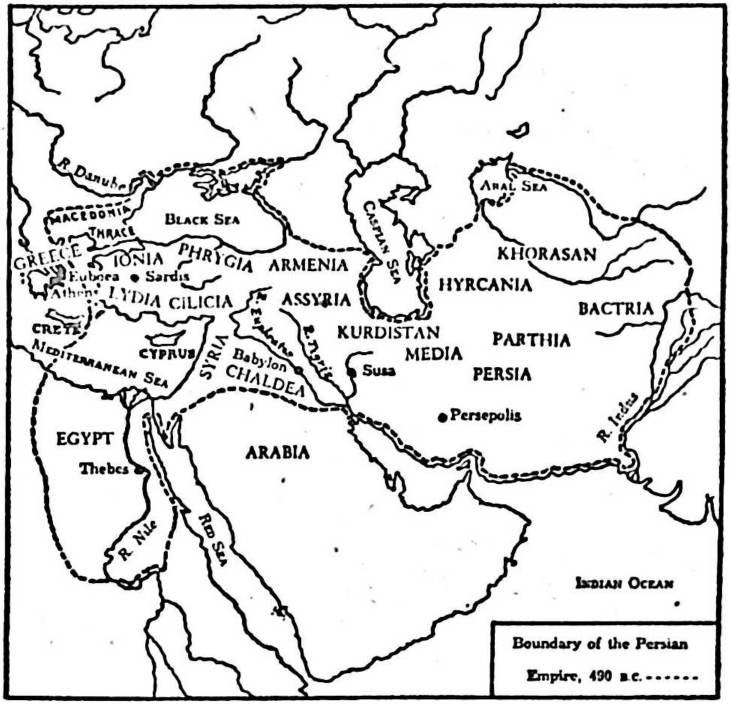
THE BATTLE OF MARATHON

By Sir Edward Creasy

From *The Fifteen Decisive Battles of the World*

With the exception of the Chinese empire, in which, throughout all ages down to the last few years, one-third of the human race has dwelt almost unconnected with the other portions, all the great kingdoms which

we know to have existed in ancient Asia were, in Darius's time, blended with the Persian. The northern Indians, the Assyrians, the Syrians, the Babylonians, the Chaldees, the Phœnicians, the



nations of Palestine, the Armenians, the Bactrians, the Lydians, the Phrygians, the Parthians, and the Medes—all obeyed the sceptre of the Great King: the Medes standing next to the native Persians in honour, and the empire being frequently spoken of as that of the Medes, or as that of the Medes and Persians. Egypt and Cyrene were Persian provinces;

the Greek colonists in Asia Minor and the islands of the Ægean were Darius's subjects ; and their gallant but unsuccessful attempts to throw off the Persian yoke had only served to rivet it more strongly, and to increase the general belief that the Greeks could not stand before the Persians in a field of battle. Darius's Scythian war, though unsuccessful in its immediate object, had brought about the subjugation of Thrace and the submission of Macedonia. From the Indus to the Peneus, all was his.

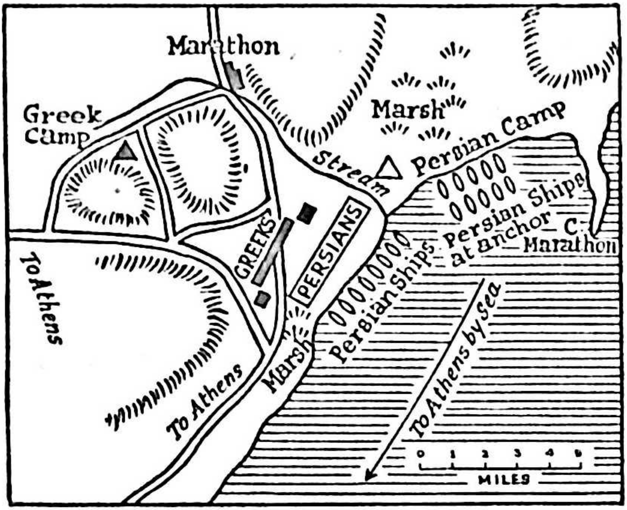
We may imagine the wrath with which the lord of so many nations must have heard, nine years before the battle of Marathon, that a strange nation towards the setting sun, called the Athenians, had dared to help his rebels in Ionia against him, and that they had plundered and burnt Sardis, the capital of one of his provinces. The insult to the Persian power was never to be forgiven or forgotten. In the emphatic simplicity of the narrative of Herodotus, the wrath of the Great King is thus described : 'Now when it was told to King Darius that Sardis had been taken and burnt by the Athenians and Ionians, he took small heed of the Ionians, well knowing who they were, and that their revolt would soon be put down : but he asked who, and what manner of men, the Athenians were. And when he had been told, he called for his bow ; and having taken it, and placed an arrow on the string, he let the arrow fly towards heaven ; and as he shot it into the air, he said, " O Supreme God ! grant me that I may avenge myself on the Athenians ". And when he had said this he appointed one of his servants to say to him every day as he sat at meat, " Sire, remember the Athenians ".

In the summer of 490 B.C., the army destined for the invasion was assembled in the Aleian plain of Cilicia, near the sea. A fleet of six hundred galleys and numerous transports was collected on the coast for the embarkation of troops, horse as well as foot. A Median general named Datis, and Artaphernes, the son of the satrap of Sardis, and who was also nephew of Darius, were placed in titular joint command of the expedition.

Datis embarked his forces in the fleet that awaited them ; and coasting along the shores of Asia Minor till he was off Samos, he then sailed due westward through the Ægean Sea for Greece, taking the islands in his way. The Naxians had, ten years before, successfully stood a siege against a Persian armament, but they now were too terrified to offer any resistance, and fled to the mountain tops, while the enemy burnt their town and laid waste their lands. Thence Datis, compelling the Greek islanders to join him with their ships and men, sailed onward to the coast of Eubœa. The little town of Carystus essayed resistance, but was quickly overpowered. He next attacked Eretria. The Eretrians repulsed the assaults of the Persians against their walls for six days ; on the seventh day they were betrayed by two of their chiefs, and the Persians occupied the city. The temples were burnt in revenge for the burning of Sardis, and the inhabitants were bound and placed as prisoners in the neighbouring islet of Ægylia, to wait there till Datis should bring the Athenians to join them in captivity, when both populations were to be led into Upper Asia, there to learn their doom from the lips of King Darius himself.

Flushed with success, and with half his mission

thus accomplished, Datis re-embarked his troops, and crossing the little channel that separates Eubœa from



the mainland, he encamped his troops on the Attic coast at Marathon, drawing up his galleys on the shelving beach, as was the custom with the navies of antiquity. The conquered islands behind him served as a place of deposit for his provisions and military stores. His position at Marathon seemed to him in every respect advantageous; and the level nature of the ground on which he encamped was favourable for the employment of his cavalry, if the Athenians should venture to engage him. Hippias, who accompanied him, and acted as the guide of the invaders, had pointed out Marathon as the best place for a landing for this very reason. Probably Hippias was also influenced by the recollection that, forty-seven

years previously, he with his father Pisistratus had crossed with an army from Eretria to Marathon, and had won an easy victory over their Athenian enemies on that very plain, which had restored them to tyrannic power. The omen seemed cheering. The place was the same; but Hippias soon learned to his cost how great a change had come over the spirit of the Athenians.

When Miltiades arrayed his men for action, he staked on the arbitrament of one battle not only the fate of Athens, but that of all Greece; for if Athens had fallen, no other Greek state except Lacedæmon, would have had the courage to resist; and the Lacedæmonians, though they would probably have died in their ranks to the last man, never could have successfully resisted the victorious Persians, and the numerous Greek troops which would have soon marched under the Persian satraps, had they prevailed over Athens.

Nor was there any power to the westward of Greece that could have offered an effectual opposition to Persia, had she once conquered Greece, and made that country a basis for future military operations. Rome was at this time in her season of utmost weakness. Her dynasty of powerful Etruscan kings had been driven out, and her infant commonwealth was reeling under the attacks of the Etruscans and Volscians from without, and the fierce dissensions between the patricians and plebeians within.

If we turn to Spain, or if we pass the great mountain chain, which, prolonged through the Pyrenees, the Cevennes, Alps, and the Balkans, divided

Northern from Southern Europe, we shall find nothing at that period but mere savage Finns, Celts, Slavs, and Teutons. Had Persia beaten Athens at Marathon, she would have found no obstacle to prevent Darius, the chosen servant of Ormuzd, from advancing his sway over all the known Western races of mankind. The infant energies of Europe would have been trodden out beneath universal conquest.

Miltiades, whilst prince of the Chersonese, had seen service in the Persian armies ; and he knew by personal observation how many elements of weakness lurked beneath their imposing aspect of strength. He knew that the bulk of their troops no longer consisted of the hardy shepherds and mountaineers from Persia Proper and Kurdistan, who won Cyrus's battles ; but that unwilling contingents from conquered nations now largely filled up the Persian muster-rolls, fighting more from compulsion than from any zeal in the cause of their masters. He had also the sagacity and the spirit to appreciate the superiority of the Greek armour and organization over the Asiatic, notwithstanding former reverses. Above all, he felt and worthily trusted the enthusiasm of the men under his command.

The Athenians whom he led had proved, by their newborn valour in recent wars against the neighbouring states, that 'Liberty and Equality of civic rights are brave spirit-stirring things : and they who, while under the yoke of a despot, had been no better men of war than any of their neighbours, as soon as they were free, became the foremost men of all ; for each felt that in fighting for a free commonwealth, he fought for himself, and, whatever he took in hand, he was zealous to do the work thoroughly'. So the

nearly contemporaneous historian Herodotus describes the change of spirit that was seen in the Athenians after their tyrants were expelled ; and Miltiades knew that in leading them against the invading army, where they had Hippias, the foe they most hated, before them, he was bringing into battle no ordinary men, and could calculate on no ordinary heroism. As for traitors, he was sure that, whatever treachery might lurk among the higher-born and the wealthier Athenians, the rank and file whom he commanded were ready to do their utmost in his and their own cause. With regard to the future attacks from Asia, he might reasonably hope that one victory would inspirit all Greece to combine against the common foe ; and that the latent seeds of revolt and disunion in the Persian empire would soon burst forth and paralyse its energies, so as to leave Greek independence secure.

With these hopes and risks, Miltiades, on the afternoon of a September day, 490 B.C., gave the word for the Athenian army to prepare for battle. There were many local associations connected with those mountain heights, which were calculated powerfully to excite the spirits of the men, and of which the commanders well knew how to avail themselves in their exhortations to their troops before the encounter. Marathon itself was a region sacred to Hercules. The verv plain on which they were to fight was the scene of the exploits of their national hero, Theseus ; and there, too, as old legends told, the Athenians and the Heraclidæ had routed the invader Eurystheus. These traditions were not mere cloudy myths, or idle fictions,

but matters of implicit faith to the men of the day: and many a fervent prayer arose from the Athenian ranks to the heroic spirits who while on earth had striven and suffered on that very spot, and who were believed to be now heavenly powers, looking down with interest on their still beloved country, and capable of interposing with superhuman aid in its behalf.

According to old national custom, the warriors of each tribe were arrayed together; neighbour thus fighting by the side of neighbour, friend by friend, and the spirit of emulation and consciousness of responsibility was excited to the very utmost. The War-Ruler, Callimachus, had the leading of the right wing; the Platæans formed the extreme left; and Themistocles and Aristides commanded the centre. The line consisted of heavy-armed spearmen only. For the Greeks (until the time of Iphicrates) took little or no account of light-armed soldiers in a pitched battle, using them only in skirmishes or for the pursuit of a defeated enemy. The panoply of the regular infantry consisted of a long spear, a shield, helmet, breast-plate, greaves, and short sword. Thus equipped, they usually advanced slowly and steadily into action in a uniform phalanx of about eight spears deep. But the military genius of Miltiades led him to deviate on this occasion from the commonplace tactics of his countrymen. It was essential for him to extend his line so as to cover all the practicable ground, and to secure himself from being outflanked and charged in the rear by the Persian horse. This extension involved the weakening of his line. Instead of a uniform reduction of his strength, he determined on detaching principally from his centre, which from

the nature of the ground would have the best opportunities for rallying if broken, and on strengthening his wings, so as to ensure advantage at those points ; and he trusted to his own skill, and to his soldiers' discipline, for the improvement of that advantage into decisive victory.

In this order, and availing himself probably of the inequalities of the ground, so as to conceal his preparations from the enemy till the last possible moment, Miltiades drew up the eleven thousand infantry, whose spears were to decide this crisis in the struggle between the European and the Asiatic worlds. The sacrifices by which the favour of Heaven was sought, and its will consulted, were announced to show propitious omens. The trumpet sounded for action, and, chanting the hymn of battle, the little army bore down upon the host of the foe. Then, too, along the muntain slopes of Marathon must have resounded the mutual exhortation which Æschylus, who fought in both battles, tells us was afterwards heard over the waves of Salamis—'On, sons of the Greeks ! Strike for the freedom of your country—strike for the freedom of your children and of your wives—for the shrines of your father's gods, and for the sepulchres of your sires. All—all are now staked upon the strife.'

Instead of advancing at the usual slow pace of the phalanx, Miltiades brought his men on at a run. They were all trained in the exercise of the palæstra, so that there was no fear of their ending the charge in breathless exhaustion : and it was of the deepest importance for him to traverse as rapidly as possible

the space of about a mile of level ground, that lay between the mountain foot and the Persian outposts, and so get his troops into close action before the Asiatic cavalry could mount, form, and manœuvre against him, or their archers keep him long under bow-shot, and before the enemys generals could fairly deploy their masses.

'When the Persians', says Herodotus, 'saw the Athenians running down on them, without horse or bowmen, and scanty in numbers, they thought them a set of madmen rushing upon certain destruction.' They began, however, to prepare to receive them, and the Eastern chiefs arrayed, as quickly as time and space allowed, the varied races who served in their motley ranks. Mountaineers from Hyrcania and Afghanistan, wild horsemen from the steppes of Khorasan, the black archers of Ethiopia, swordsmen from the banks of the Indus, the Oxus, the Euphrates, and the Nile, made ready against the enemies of the Great King. But no national cause inspired them, except the division of native Persians; and in the large host there was no uniformity of language, creed, race, or military system. Still, among them were many gallant men, under a veteran general; they were familiarized with victory; and in contemptuous confidence, their infantry, which alone had time to form, awaited the Athenian charge. On came the Greeks, with one unwavering line of levelled spears, against which the light targets, the short lances and scimitars of the Orientals offered weak defence. The front rank of the Asiatics must have gone down to a man at the first shock. Still they recoiled not, but strove by individual gallantry, and by the weight of numbers, to make up for the dis-

advantages of weapons and tactics and to bear back the shallow line of the Europeans. In the centre, where the native Persians and the Sacæ fought, they succeeded in breaking through the weaker part of the Athenian phalanx ; and the tribes led by Aristides and Themistocles were, after a brave resistance, driven back over the plain, and chased by the Persians up the valley towards the inner country. There the nature of the ground gave the opportunity of rallying and renewing the struggle ; and meanwhile the Greek wings, where Miltiades had concentrated his chief strength, had routed the Asiatics opposed to them ; and the Athenian and Platæan officers, instead of pursuing the fugitives, kept their troops well in hand and, wheeling round, they formed the two wings together. Miltiades instantly led them against the Persian centre, which had hitherto been triumphant, but which now fell back and prepared to encounter these new and unexpected assailants. Aristides and Themistocles renewed the fight with their reorganized troops, and the full force of the Greeks was brought into close action with the Persian and Sacian divisions of the enemy. Datis's veterans strove hard to keep their ground, and evening was approaching before the stern encounter was decided.

But the Persians, with their slight wicker shields, destitute of body-armour, and never taught by training to keep the even front and act with the regular movement of the Greek infantry, fought at grievous disadvantage with their shorter and feebler weapons against the compact array of well-armed Athenian and Platæan spearmen, all perfectly drilled to perform each necessary evolution in concert, and to preserve a uniform and unwavering line in battle. In

personal courage and in bodily activity, the Persians were not inferior to their adversaries. Their spirits were not yet cowed by the recollection of former defeats; and they lavished their lives freely, rather than forfeit the fame which they had won by so many victories. While their rear ranks poured an incessant shower of arrows over the heads of their comrades, the foremost Persians kept rushing forward, sometimes singly, sometimes in desperate groups of twelve or ten, upon the projecting spears of the Greeks, striving to force a lane into the phalanx and to bring their scimitars and daggers into play. But the Greeks felt their superiority, and though the fatigue of the long-continued action told heavily upon their inferior numbers, the sight of the carnage that they dealt amongst their assailants nerved them to fight still more fiercely on.

At last the previously unvanquished lords of Asia turned their backs and fled, and the Greeks followed, striking them down, to the water's edge, where the invaders were now hastily launching their galleys, and seeking to embark and fly. Flushed with success, the Athenians dashed at the fleet. 'Bring fire, bring fire,' was their cry; and they began to lay hold of the ships. But here the Asiatics resisted desperately, and the principal loss sustained by the Greeks was in the assault on the fleet. Here fell the brave War-Ruler Callimachus, the general Stesilaus and other Athenians of note. Conspicuous among them was Cynægeirius, the brother of the tragic poet Æschylus. He had grasped the ornamental work on the stern of one of the galleys, and had his hand struck off by an axe. Seven galleys were captured; but the Persians succeeded in saving the rest. They pushed

off from the fatal shore: but even here the skill of Datis did not desert him, and he sailed round to the western coast of Attica in hopes to find Athens unprotected, and to gain possession of it from some of the partisans of Hippias. Miltiades, however, saw and counteracted his manœuvre. Leaving Aristides and the troops of his tribe to guard the spoil and the slain, the Athenian commander led his conquering army by a rapid night-march back across the country to Athens. And when the Persian fleet had doubled the Cape of Sunium and sailed up to the Athenian harbour in the morning, Datis saw arrayed on the heights above the city the troops before whom his men had fled on the preceding evening. All hope of further conquest in Europe for the time was abandoned, and the baffled armada returned to the Asiatic coasts.

The number of the Persian dead was six thousand four hundred; of the Athenians, a hundred and ninety-two. The apparent disproportion between the losses of the two armies is not surprising when we remember the armour of the Greek spearmen, and the impossibility of heavy slaughter being inflicted by sword or lance on troops so armed, as long as they kept firm in their ranks.

A lofty mound was raised on the plain of Marathon, beneath which the remains of the men of Athens who fell in the battle were deposited. Ten columns were erected on the spot, one for each of the Athenian tribes; and on the monumental column of each tribe were graven the names of those of its members whose glory it was to have fallen in the great battle of liberation. The antiquarian Pausanias read those

names there six hundred years after the time when they were first graven. The columns have long perished, but the mound still marks the spot where the noblest heroes of antiquity repose.

The battle was sculptured also on the Temple of Victory in the Acropolis ; and even now there may be traced on the frieze the figures of the Persian combatants with their lunar shields, their bows and quivers, their curved scimitars, their loose trousers, and Phrygian tiaras.

These and other memorials of Marathon were the produce of the meridian age of Athenian intellectual splendour—of the age of Phidias and Pericles. For it was not merely by the generation of men whom the battle liberated from Hippias and the Medes that the transcendant importance of their victory was gratefully recognized. Through the whole epoch of her prosperity, through the long Olympiads of her decay, through centuries after her fall, Athens looked back on the day of Marathon as the brightest of her national existence.

It was not indeed by one defeat, however signal, that the pride of Persia could be broken, and her dreams of universal empire be dispelled. Ten years afterwards she renewed her attempts upon Europe on a grander scale of enterprise, and was repulsed by Greece with greater and reiterated loss.

But mighty and momentous as these battles were, they rank not with Marathon in importance. They originated no new impulse. They turned back no current of fate. They were merely confirmatory of the already existing bias which Marathon had created. The day of Marathon is the critical epoch in the history of the two nations. It broke for ever the

spell of Persian invincibility, which had paralysed men's minds. It generated among the Greeks the spirit which beat back Xerxes and afterwards led on Xenophon, Agesilaus, and Alexander, in terrible retaliation, through their Asiatic campaigns. It secured for mankind the intellectual treasures of Athens, the growth of free institutions, the liberal enlightenment of the Western world, and the gradual ascendancy for many ages of the great principles of European civilization.

SECTION 5—WAR

Today

A victory of German arms under the Kaiser's rule in 1914 would have been bad enough for freedom-loving peoples, but it would have been a mild scourge in comparison with a Hitler victory in 1940. In this sense, the 1940 Battle of Britain may be regarded as a far more decisive battle of the world than the great battle of the Marne in 1914, where the Germans were checked in their onslaught upon France. For in 1940, as everyone knows, Holland, Belgium and France had all collapsed before the German *blitzkrieg*, and nothing appeared more certain than that the invasion of Britain would follow and that within a few weeks Hitler would be able to dictate, amid the ruins of London, terms of peace which would in effect bring to an end the British Commonwealth of Nations and the political experiments it embodies. The Germans themselves were completely confident of this.

Whether owing to their over-confidence in themselves and their arms, or to inability to understand the reactions of those who differ from them and oppose them, they hit upon the wrong plan for dealing a final blow to Britain. The attempt to wipe out London by aerial attack, and to

destroy civilian morale in England by inflicting enormous damage on the crowded areas of the East End and other residential centres of the poorer classes, not only roused the British people to sterner resistance, but met with such fierce opposition from the Royal Air Force, that after three months the German losses in planes and pilots had reached such enormous figures that they were obliged to pause. There can be little doubt that it was this check to the German arms that turned the tide of the war, as it enabled the British to gain time to reorganize and to re-equip their forces after the collapse of France.

This battle has a very special interest, moreover, as it was the first in which the latest weapon of war, the aeroplane, was employed in vast numbers on both sides.

THE BATTLE OF BRITAIN

By Hilary St George Saunders

An Air Ministry Record

The Scene is Set

It is now possible to tell, in great part, the story of the action on which Mr Winston Churchill made his now famous comment in the House of Commons: 'Never in the field of human conflict was so much owed by so many to so few.' Before describing it, however, it is worth while to recall the extraordinary nature of the battle. Nothing like it has ever been fought before in the history of mankind. It is true that aircraft frequently met in combat in the last war; but they did so in numbers very small when compared with those which were engaged over the fields of Kent and Sussex, the rolling country of

Hampshire and Dorset, the flat lands of Essex and the sprawling mass of London. Moreover, from 1914 to 1918 fights took place either between individual aircraft or between small formations, and an engagement in which more than a hundred aircraft on both sides were involved was rare even in the later stages of the war. The issue was, in fact, decided not in the air, in which element the rival air forces played an important but secondary part, but by slow-moving infantry in the heavy mud of Flanders and the Somme. It may be that the same thing, or something like it, will ultimately happen in the present war. Up to the moment, however, the first decisive encounter between Britain and Germany has taken place in the air and was fought three, four, five, and sometimes more than six miles above the surface of the earth by some hundreds of aircraft flying at speeds often in excess of three hundred miles an hour.

While this great battle was being fought day after day, the men and women of this country went about their business with very little idea of what was happening high up above their heads in the fields of air. This battle was not shrouded in the majestic and terrible smoke of a land bombardment with its roar of guns, its flash of shells, its fountains of erupting earth. There was no sound nor fury—only a pattern of white vapour trails, leisurely changing form and shape, traced by a number of tiny specks scintillating like diamonds in the splendid sunlight. From very far away there broke out from time to time a chatter against the duller sound of engines. Yet had that chatter not broken out, that remote sound would have changed first to a roar and then to a fierce shriek, punctuated by the crash of heavy

bombs as bomber after bomber unloaded its cargo. In a few days the southern towns of England, the capital of the Empire itself, would have suffered the fate of Warsaw or Rotterdam.

The avowed object of the enemy was to obtain a quick decision and to end the war by the autumn or early winter of 1940. To achieve this an invasion of Britain was evidently thought to be essential. Preparations to launch it were pushed forward with great energy and determination throughout the last days of June, the month of July and the first week of August. By the 8th August the enemy felt himself ready to begin the opening phase, on the success of which his plan depended. Before the German Army could land it was necessary to destroy our coastal convoys, to sink or immobilize such units of the Royal Navy as would dispute its passage, and above all to drive the Royal Air Force from the sky. He, therefore, launched a series of air attacks, first on our shipping and ports and then on our aerodromes. There were four phases in the battle, the first from 8th - 18th August, the second from 19th August - 5th September, the third from 6th September - 5th October, the fourth from 6th - 31st October. During this last phase daylight attacks gave way gradually to night raids which increased as the month went on. It should, however, be remembered that throughout the battle the enemy made use of night as well as day bombing, the first growing in volume and violence as the second fell away.

What was the plan which he sought to carry through in these four phases? It is impossible to say with certainty at this moment. The German mind is very methodical and immensely painstaking.

Schemes are worked out to the last detail ; the organization is superb and, provided the calculations are correct, the plan goes without a hitch. But again and again history has shown that, if the original plan fails or becomes impracticable, the German has little power of improvization, and 'if the trumpet give an uncertain sound, who shall prepare himself to the battle ?' A brand new plan has to be worked out in full detail, and when this has been done it may well be too late. In this instance the Luftwaffe was designed to prepare the way for the German Army by smashing the enemy's resistance, and it was a fundamental assumption in Berlin that Germany could in every case establish and maintain air supremacy.

The general plan for the use of the Luftwaffe was to seize and exploit the full mastery of the air. This was the main feature in the Polish campaign, in the attacks on Norway and the Low Countries, and even to a large extent in France. Aerodromes were to be put out of action thus tying the opposing Air Forces to the ground. Ports and communications could then be destroyed without hindrance, the military forces of the enemy paralysed and the German armoured divisions placed in a position to operate undisturbed. Success meant the destruction of civilian morale, and then internal disruption and surrender.

The Offensive is Launched

In the first stage the enemy sent over massed formations of bombers escorted by similar formations

of single- and twin-engined fighters. The bombers were for the most part Ju. 87's (dive bombers), with a smaller quantity of He. 111's, Do. 17's and Ju. 88's. The fighter escorts flew in large, unwieldy formations, from 5—10,000 ft. above the bombers, where the protection they afforded was not very effective. Using these tactical formations the enemy made twenty-six attacks during this first stage. He began by renewing his assaults on our shipping. It may well be that this was still regarded as the most vulnerable form of target and the easiest to attack, for not only are slow-moving ships difficult to defend, but casualties among the pilots of the defence are always higher when the action is fought over water. He may also have wished to test the strength of our general defences. Success against these would augur well for the next stage. At any rate, on 8th August two convoys were fiercely attacked, one of them twice. Sixty enemy aircraft in the morning and more than a hundred soon after midday, deployed on a front of over twenty miles, tried to sink or disperse a convoy off the Isle of Wight. They succeeded in sinking two ships. In the afternoon at 4.15 more than a hundred and thirty appeared over another convoy off Bournemouth. This they were able to disperse but they lost fairly heavily in doing so. The enemy renewed the assault three days later, choosing as his targets the towns of Portland and Weymouth, as well as convoys in the Thames Estuary and off Norwich. In these attacks he relied greatly on dive bombers, which proved no match for our Hurricanes. Nevertheless some damage was done both in Portland and Weymouth. This may have encouraged him, for on 12th August, early in the morning, he launched about two

hundred aircraft in eleven waves against Dover. Shortly before noon a hundred and fifty more of the enemy attacked Portsmouth and the Isle of Wight. German losses were already very considerable, for one hundred and eighty-two aircraft had been destroyed.

On the 13th and 15th the attacks on Portsmouth were renewed and in some of them, notably that which began soon after 5 in the afternoon of the 15th, between three and four hundred aircraft were employed. The enemy was by now beginning to realize that our fighter force was considerably stronger than he had imagined. It was evidently time to take drastic action. Our fighters must be put out of commission. Therefore, while still maintaining his attacks on coastal towns, he sent large forces to deal with fighter aerodromes in the south and south-east of England.

Once more the Luftwaffe did a certain amount of damage but at a cost which even Gœring must have regarded as excessive. On that day, 15th August, a hundred and eighty German aircraft are known to have been destroyed. Since the opening of the battle he had now lost four hundred and seventy-two aircraft. Nevertheless he still returned to the charge, throwing in between five and six hundred aircraft on 16th August and about the same number on 18th. His losses were again very heavy. In those two days two hundred and forty-five aircraft were shot down. One of them, a Heinkel 111, fell to a Sergeant pilot flying an unarmed Anson aircraft of the Training Command. Whether he intentionally rammed the enemy will never be known, for both aircraft fell to the ground interlocked and there were no survivors.

On 18th August, in the evening attack on the Thames Estuary, one squadron alone of thirteen Hurricanes shot down without loss an equal number of the enemy in fifty minutes.

In the ten days since the opening of the attack on 8th August, Gœring had now lost six hundred and ninety-seven aircraft. Our own losses during the same period were not light, for we lost one hundred and fifty-three. Sixty pilots were safe though some of them were wounded.

The pace was too hot to last. Gœring called halt and gave his Luftwaffe a rest which lasted for five days.

* * *

The Attack on Aerodromes

During this lull, Gœring evidently decided that a change of objectives was necessary. Perhaps he thought that he had achieved the necessary results, and that Portland and Portsmouth together with our coastal aerodromes were virtually out of action. Perhaps he was under the impression that inland aerodromes, factories and other industrial targets would not be as stoutly defended. It is more probable, however, that he merely gave the order for the second part of the plan to be put into operation and disregarded the failure of the first part—either deliberately, or because he had no alternative. In this next stage diversionary attacks against different parts of the country became less frequent. The main attack was now delivered on a wider front. Enemy tactics were also changed. The number of escorting fighters was increased and the size of bomber forma-

tions reduced. The covering fighter screen flew at very great heights. Enemy bomber formations were also protected by a box of fighters, some of which flew slightly above to a flank or in rear, others slightly above and ahead, and yet others weaving in and out between the sub-formations of the bombers. This type of formation succeeded on several occasions in breaking through the forward screens of our fighter forces by sheer weight of numbers and in attaining their objectives even after numerous casualties had been inflicted. On other occasions smallish formations of enemy long-range bombers deliberately left their fighter escort as soon as it had joined battle and proceeded towards south or south-west London unaccompanied. They suffered heavy casualties when engaged by our rear rank of fighters.

Having thus altered his tactical formations the enemy proceeded to deliver some thirty-five major attacks between the 24th August and 5th September. His object, as has been said, was to put out of action inland fighter aerodromes and aircraft factories. He did not, however, disdain purely residential districts in Kent, the Thames Estuary and Essex. These could in no case be described as of military importance.

The opening of September showed little, if any, falling off in the assaults of the enemy. There were three heavy attacks on 1st September, five on 2nd, one on 3rd and two on 4th and 5th. One of the attacks on the 2nd got to within ten miles of London, but most of them were once again directed against fighter aerodromes. This was the last of the thirty-five main attacks delivered in this phase. They cost the Germans five hundred and sixty-two aircraft

known to have been destroyed. Our own losses were two hundred and nineteen aircraft, but a hundred and thirty-two of their pilots were saved.

What did the enemy succeed in accomplishing in just under a month of heavy fighting during which he flung in squadron after squadron of the Luftwaffe without regard to the cost ? His object, be it remembered, was to 'ground' the fighters of the Royal Air Force and to destroy so large a number of pilots and aircraft as to put it, temporarily at least, out of action. As has already been made clear, the Germans, after their opening heavy attacks on convoys and on Portsmouth and Portland, concentrated on fighter aerodromes, first on, or near the coast, and then on those farther inland. Though they had done damage to aerodromes both near the coast and inland and thus put the fighting efficiency of the fighter squadrons to considerable strain, they failed entirely to put them out of action. The staff and ground services worked day and night and the operations of our fighter squadrons were not in fact interrupted. By the 6th September the Germans either believed that they had achieved success and that it only remained for them to bomb a defenceless London until it surrendered, or, following their pre-arranged plan, they automatically switched their attack against the capital because the moment had come to do so.

Those days saw the climax of the first half of the battle. As they drew to a close Gœring's position became not unlike that of Marshal Ney at Waterloo, when at 4.30 in the afternoon he flung thirty-seven squadrons of Kellermann's Cuirassiers, backed by the Heavy Cavalry of the Guard, against the hard-pressed British squares. Napoleon was unable to

find the necessary support and Ney's effort was made in vain. Gœring may perhaps have been in the same position, though the attacks of the Luftwaffe continued to be pressed hard throughout September. It may be that Gœring had made up his mind to attack targets more easily reached than were our fighter aerodromes. It may be that he was merely working to a time-table. It may be that he thought that our fighter defence was sufficiently weakened. What probably happened can be conveyed by a simple analogy. Imagine a game which involves knocking down a number of objects such as ninepins or skittles, in so many turns. The player has worked out a detailed scheme for attacking these by stages. The first two or three shots, however, result in misses, and the prudent man would pause to reconsider his policy at this point. Can he pursue his scheme and still win, or must he abandon it and try another ? But this player, Gœring, is so certain of winning that he goes on without stopping to think whether or not the preliminary shots have been successful. Suddenly he realizes that, with only one or two turns left, he cannot possibly win on the lines of his pre-arranged scheme and he makes a desperate effort to knock down the whole set in the last few shots. This may be no more than a speculation. The facts are that on 7th September Gœring switched his attack away from fighter aerodromes on to industrial and other targets, and he began by making London his main objective.

* * *

The Crux of the Battle

The attack on London and its environs was the crux of the battle. It continued with little respite from the 7th September until 5th October and was the last desperate attempt to win victory. This could no longer be achieved cheaply, for the Luftwaffe had already suffered terrible losses. But it might still be possible to destroy London and thus to win the war. Despite the hard fighting of the previous month the fighter defences of the R.A.F. were still fighting as hard as ever. They had to be overcome before London could be placed at Hitler's mercy. Gœring still believed in superior numbers. These would win the trick. They had brought him swift victory in Poland, Norway, the Low Countries, Belgium and France ; they might still bring victory in Britain. He put forth all his strength in a final endeavour to knock down the ninepins at any cost. The Luftwaffe delivered thirty-eight major attacks by day between the 6th September and 5th October.

After battering away morning, noon and night throughout the 6th September against our inland fighter aerodromes, the German Air Force made a tremendous effort on the 7th to reach London and destroy the docks. Three hundred and fifty bombers and fighters flew in two waves east of Croydon up to the Thames Estuary, some penetrating nearly as far as Cambridge. They were met over Kent and east Surrey, but a number broke through and were engaged over the capital itself. For the first time since that September day in 1666, when Mr Samuel Pepys informed the King at Whitehall that the City was on fire, Londoners saw flames leaping up

from various points in the crowded and densely populated districts of Dockland and Woolwich, while from every German radio station announcers broadcast a running commentary on the action, in which imagination and wishful thinking were nicely blended. London did not emerge unscathed. Damage was inflicted on dock buildings, on several factories, on railway communications, on gas and electricity plants. It was also inflicted on the enemy. One hundred and three German aircraft were destroyed. These heavy casualties shook the German High Command, for though the attacks were renewed and continued, evidently all was no longer well. Still, the Luftwaffe persevered with great tenacity and courage, delivering heavy attacks on 9th September, using on that occasion a number of four-engined bombers ; on the 11th, when about thirty aircraft penetrated to Central London ; on the 13th and again on the 15th. Those who got through on the 11th were so savagely handled by our fighter defence that the losses among their crews were estimated to be not less than two hundred and fifty. On the next day a single German aircraft penetrated the defence by the clever use of cloud cover and bombed Buckingham Palace in the morning. On 15th September came the climax ; five hundred German aircraft, two hundred and fifty in the morning and two hundred and fifty in the afternoon, fought a running fight with our Hurricanes and Spitfires from Hammersmith to Dungeness, from Bow to the coast of France. This engagement cost the enemy one hundred and eighty-five aircraft known to have been destroyed. Altogether, between the 6th September and the 5th October, he had lost eight

hundred and eighty-three aircraft.

It is not necessary to record in detail the rest of the fighting which endured to 31st October. Enough has been said to show the nature of the German effort and of our defence. There were, however, three more major assaults delivered on 27th September, 30th September and 5th October.

Thus between 11th September and 5th October the enemy delivered some thirty-two major attacks by day. In all these, bombers were used and their escort of fighters steadily increased in numbers, till the ratio rose to four fighters to one bomber. Of these attacks fifteen were made on the area of Greater London, ten against Kent and the Thames Estuary, six on Southampton and one on Reading. While these last attacks were well executed and pressed home, those on London were less determined than in the opening stages of the battle. On many occasions the enemy jettisoned his bombs before reaching his apparent objective, as soon as he found himself in contact with our fighters. Throughout this period the bombing attacks were mostly made from high level. To enable their bombers to reach their targets the Germans sought to draw off our fighter patrols by high altitude rather than by geographical diversions. High fighter screens were sent over to occupy our fighters while the bombers closely escorted by more fighters tried to get through, some 6,000 to 10,000 feet below.

As autumn came on and the sky grew more cloudy, the enemy began to make increasing use of fighters flying very high above the clouds. His most usual practice was to put a very high screen of these fighters over Kent from fifteen minutes to three-quarters of an hour before his bombers appeared. The object

was evidently to draw off our fighters, exhaust their petrol and thus make it impossible for them to engage the bombers. Sometimes, however, the high-flying enemy fighters appeared only a few minutes before the bombers, which were themselves escorted by other fighters. These escorts were normally divided into two parts, a big formation above and on both flanks or in the rear of the bombers, and a small formation on the same level as, or slightly in front of, the aircraft they were protecting.

The enemy's high fighter screen was engaged by pairs of Spitfire squadrons half-way between London and the coast, while wings of two or three Hurricane squadrons attacked the bombers and their escorts before they reached the fighter aerodromes east and south of London. Other squadrons formed a third and inner ring patrolling above these aerodromes forming a defensive screen to guard the southern approaches to London. These intercepted the third wave of any attack and mopped up the retreating formations belonging to earlier waves. The success of these tactics may be gauged by the number of casualties inflicted on the Germans. Between 11th September and 5th October, No. 11 Group of the Fighter Command alone destroyed four hundred and forty-two enemy aircraft for certain. This was accomplished with the loss of fifty-eight pilots, giving a ratio of seven and a half enemy to one British pilot lost.

The Luftwaffe in Retreat

On 6th October, the fourth and final stage of the battle began. The enemy's strategy and method of

attack now changed completely. He withdrew nearly all his long-range bombers and tried to achieve his end by means of fighters and fighter bombers. This change is the surest proof that he had received such a hammering as to make further use of his depleted bombing force by daylight too costly. He preferred to send it over by night, and this he did in increasing numbers. His tactical handling of his fighters and fighter bombers—a few of them were Me. 110's but they were mostly Me. 109's fitted with a makeshift bomb-carrier enabling them to take a pair of bombs at a speed of about three hundred miles an hour—was this.

Mass fighter formations were sent over at a great height in almost continuous waves to attack London, still the principal target. He doubtless hoped by this means to wear out our fighter defence by forcing it to engage, at much higher altitudes, aircraft which were making the best use possible of high cloud cover. In the early stages he reduced the size of his formations and used flights of from two to nine aircraft. The fighter bombers were protected more and more by Me. 110 fighters. Evidently, however, this new plan did not achieve the success for which he hoped, for in the third week of October he reverted once more to large formations flying at 30,000 feet or higher. To enable them to break through, the Germans continued to use the tactics of diversion. Whenever the weather was good enough, waves of fighters appeared almost continuously over the south-east of England. Using the cover these provided, very high-flying fighter bombers made frequent and rapid attacks on the London area. On sighting our fighters, however, they often jettisoned their bombs

and made off. They showed, in fact, little tendency to engage, but when they did so they sometimes gained the advantage of surprise owing to the height at which they were flying.

Our own tactics were immediately altered so successfully that No. 11 Group accounted for one hundred and sixty-seven enemy aircraft in three and a half weeks. The cost to the Group was forty-five pilots. In this phase the number of enemy probably destroyed rose considerably, because the fighting took place so high up that our pilots were unable to see the ultimate fate of many of the German aircraft which fell away after the encounter towards the sea. The physical strain of fighting at heights of 30,000 feet or more proved very severe.

It is possible to detect a feeling of despair in the hearts of the Luftwaffe during this final phase of the struggle. Try as they might, and did, our defences were still not only intact but invulnerable. Occasionally an odd Me. 109 or a small formation broke through and reached London, but the weight of the bombs which they succeeded in dropping was only a fraction of what had been dropped in August and September. Moreover, there was little attempt at precision bombing. There can be no better proof of the enemy's failure than that furnished by the citizens of London. During the early stages, many of them took cover when the sirens sounded. Post Offices, Ministries and Public Departments, large stores—all closed their doors and sent their staffs and any visitors in the building to cover. Very soon, however, it was noticed that most of the noise, at no time to be compared with the nightly barrage which soon became the background of their slumbers, was

due to gunfire and not to the explosion of bombs. Trails of white vapour forming fantastic and beautiful patterns in the summer sky were often the only indication that the Luftwaffe was over the capital. These pleased the eye and provided a subject for speculation in the streets and public resorts. Soon, however, even these failed to attract much notice. As the days wore on the Londoner, always confident in the ability of the Royal Air Force to protect him in the hours of daylight, began to take that protection for granted. Except when roof-watchers—the Prime Minister's 'Jim Crows'—signalled that danger was imminent, life went on as usual and still does.

There can be no better tribute to the men of the fighter squadrons.

The Cost

By 31st October the battle was over. It did not cease dramatically. It died gradually away ; but the British victory was none the less certain and complete. Bitter experience had at last taught the enemy the cost of daylight attacks. He took to the cover of night. For what indeed did the Germans accomplish in all their attacks ? At the outset they sank five ships and damaged five more sailing in our coastal convoys ; they next did intermittent and sometimes severe damage to aerodromes ; they scored hits on a number of factories which caused production to slow down for a short time. In London they did considerable damage to the docks and to various famous buildings, including Buckingham Palace. They destroyed or damaged beyond repair some thousands of houses ; they killed during the day 1,700 persons,

nearly all of them civilians, and seriously wounded 3,360. At night 12,581 persons were killed and 16,965 injured. These heavy casualties occurred during the hours when darkness prevented the enemy from being met and turned back as he was in daylight. They provide a striking, if ominous, proof of the efficiency and devotion of the fighters of the Royal Air Force. To what height would those figures have risen had there been no Hurricanes and Spitfires on the alert from dawn to dusk engaging the enemy whenever he appeared—resolute, ruthless, triumphant?

Such, then, was the measure of the enemy's achievement during eighty-four days of almost continuous attack. A little earlier in the year the Germans had taken thirty-seven days to over-run and utterly to cast down the Kingdoms of the Netherlands and of Belgium and the Republic of France. What the Luftwaffe failed to do was to destroy the fighter squadrons of the Royal Air Force which were indeed stronger at the end of the battle than at the beginning. This failure meant defeat—defeat of the German Air Force itself, defeat of a carefully designed strategical plan, defeat of that which Hitler most longed for—the invasion of this island. The Luftwaffe which, as Goebbels said on the eve of the battle, had 'prepared the final conquest of the last enemy—England', did its utmost and paid very heavily for the attempt. Between the 8th August and 31st October, 2,375[1] German aircraft are known to have been destroyed in daylight. This figure takes no

[1] Throughout this account all figures relating to enemy aircraft concern only those actually destroyed. The number damaged or regarding whose fate complete evidence proved impossible to obtain has not been given.

account of those lost at night or those, seen by thousands, staggering back to their French bases, wings and fuselage full of holes, ailerons shot away, engines smoking and dripping glycol, undercarriages dangling—the retreating remnants of a shattered and disordered armada. This melancholy procession of the defeated was to be observed not once but many times during those summer and autumn days of 1940. Truly it was a great deliverance.

It was not achieved without cost. The Royal Air Force lost 375 pilots killed and 358 wounded. This was the price, and of those who died let it be said that:

> All the soul
> Of man is resolution which expires
> Never from valiant men till their last breath.

Such was the Battle of Britain in 1940. Future historians may compare it with Marathon, Trafalgar and the Marne.

SECTION 6—THE FUTURE

MARVELLOUS improvements may yet come to pass when the majority of people are well educated. For it is a fact that 'knowledge is power'. But power can be used for evil as easily as for good, and so can knowledge. And one of the newest forms of knowledge is that of the mind, the study of psychology.

Even now, we are only just beginning to know what a powerful effect our minds have upon our bodies, and, what is still more strange, what a powerful effect the part of our mind which is called the 'subconscious' has upon the whole of our life. Already this knowledge is being made

use of in education, to help people, old as well as young, to overcome bad habits, or to cure them of mental diseases.

But if our minds can thus be influenced to change our ways for the better, or to cure us of disease, they can also be influenced in the opposite direction, to make us do evil in the belief that it is good, and to alter our character for the worse. In fact, this is exactly what has been done and is being done by a great deal of the 'propaganda' sent out by the press and the radio. The young people of Germany and Italy have been very thoroughly taught that it is for the good of their own nations (and therefore, according to them, of the world) that they should turn out all the Jews, put an end to the freedom to hold different opinions from those of their rulers, and assert themselves everywhere as the master-race, even though it might necessitate the massacre of millions and the infliction of misery on tens of millions more, just because they do not happen to be Nazis or Fascists. And many of them sincerely believe that these ideas are right, and are willing to die to uphold them. Probably, if we had been born in Germany, we should now have been upholding those very opinions, instead of being willing to die rather than become Hitler's slaves. Such is the power of propaganda, the power to influence the mind to think in a certain way.

Clearly, this is a very serious thing. Can we be sure that we are not all the time being thus influenced? Can we be sure that the opinions we hold are really our own, and not simply opinions which have been put into our minds by parents, teachers, newspapers, politicians, religion, the cinema, and the radio? The answer is, frankly, that we cannot. Are we then helpless, like small boats driven hither and thither by strong currents which we cannot see? No. There is at least one thing we can do to safeguard ourselves, and that is to insist always on hearing opposing views upon important questions. Of course, even then, we may be strongly prejudiced by reason of our birth, family, religion, social position, and so on. But at least we shall have a better chance of using our own judgement than if we simply heard one side and one alone. And it is of

vital importance that there should always be a strong and intelligent opposition. The absence of that is one of the weakest spots in all totalitarian States.

In the extract which follows, a clever modern writer, Aldous Huxley, humorously depicts what life might be like in a completely totalitarian State, where every child had been mentally trained (or 'conditioned' as we say) to accept the opinions and the way of life which the Government has laid down. Education begins almost from the moment of birth (in fact, birth itself is here depicted as an artificial process). The babies destined to be manual workers are conditioned to dislike picture-books and flowers, so that they may never desire higher education. How it is supposed to have been done, you will be amused to read. But, if it really *could* be done, it might not be so amusing . . . except for the chosen few who were educated to boss the rest.

BRAVE NEW WORLD

By Aldous Huxley

From *Brave New World*

A squat grey building of only thirty-four stories. Over the main entrance the words, CENTRAL LONDON HATCHERY AND CONDITIONING CENTRE, and, in a shield, the World State's motto, COMMUNITY, IDENTITY, STABILITY.

Mr Foster was left in the Decanting Room. The D.H.C. and his students stepped into the nearest lift and were carried up to the fifth floor. INFANT NURSERIES. NEO-PAVLOVIAN CONDITIONING ROOMS, announced the notice-board.

The Director opened a door. They were in a large

bare room, very bright and sunny ; for the whole of the southern wall was a single window. Half a dozen nurses, trousered and jacketed in the regulation white viscose-linen uniform, their hair aseptically hidden under white caps, were engaged in setting out bowls of roses in a long row across the floor. Big bowls, packed tight with blossom. Thousands of petals, ripe-blown and silkily smooth, like the cheeks of innumerable little cherubs.

The nurses stiffened to attention as the D.H.C. came in.

'Set out the books,' he said curtly.

In silence the nurses obeyed his command. Between the rose-bowls the books were duly set out— a row of nursery quartos opened invitingly each at some gaily coloured image of beast or fish or bird.

'Now bring in the children.'

They hurried out of the room and returned in a minute or two, each pushing a kind of tall dumb-waiter laden, on all its four wire-netted shelves, with eight-month-old babies, all exactly alike (a Bokanovsky Group, it was evident) and all (since their caste was Delta) dressed in khaki.

'Put them down on the floor.'

The infants were unloaded.

'Now turn them so that they can see the flowers and books.'

Turned, the babies at once fell silent, then began to crawl towards those clusters of sleek colours, those shapes so gay and brilliant on the white pages. As they approached, the sun came out of a momentary eclipse behind a cloud. The roses flamed up as though with a sudden passion from within ; a new and profound significance seemed to suffuse the shining

pages of the books. From the ranks of the crawling babies came little squeals of excitement, gurgles and twitterings of pleasure.

The Director rubbed his hands. 'Excellent!' he said. 'It might almost have been done on purpose.'

The swiftest crawlers were already at their goal. Small hands reached out uncertainly, touched, grasped, unpetalling the transfigured roses, crumpling the illuminated pages of the books. The Director waited until all were happily busy. Then, 'Watch carefully,' he said. And, lifting his hand, he gave the signal.

The Head Nurse, who was standing by a switchboard at the other end of the room, pressed down a little lever.

There was a violent explosion. Shriller and ever shriller, a siren shrieked. Alarm bells maddeningly sounded.

The children started, screamed; their faces were distorted with terror.

'And now,' the Director shouted (for the noise was deafening), 'now we proceed to rub in the lesson with a mild electric shock.'

He waved his hand again, and the Head Nurse pressed a second lever. The screaming of the babies suddenly changed its tone. There was something desperate, almost insane, about the sharp spasmodic yelps to which they now gave utterance. Their little bodies twitched and stiffened; their limbs moved jerkily as if to the tug of unseen wires.

'We can electrify that whole strip of floor,' bawled the Director in explanation. 'But that's enough,' he signalled to the nurse.

The explosions ceased, the bells stopped ringing,

the shriek of the siren died down from tone to tone into silence. The stiffly twitching bodies relaxed, and what had become the sob and yelp of infant maniacs broadened out once more into a normal howl of ordinary terror.

'Offer them the flowers and the books again.'

The nurses obeyed; but at the approach of the roses, at the mere sight of those gaily-coloured images of pussy and cock-a-doodle-doo and baa-baa black sheep, the infants shrank away in horror; the volume of their howling suddenly increased.

'Observe,' said the Director triumphantly, 'observe.'

Books and loud noises, flowers and electric shocks—already in the infant mind these couples were compromisingly linked; and after two hundred repetitions of the same or a similar lesson would be wedded indissolubly. What man has joined, nature is powerless to put asunder.

'They'll grow up with what the psychologists used to call an "instinctive" hatred of books and flowers. Reflexes unalterably conditioned. They'll be safe from books and botany all their lives.' The Director turned to his nurses. 'Take them away again.'

Still yelling, the khaki babies were loaded on to their dumb-waiters and wheeled out, leaving behind them the smell of sour milk and a most welcome silence.

One of the students held up his hand; and though he could see quite well why you couldn't have lower-caste people wasting the Community's time over books, and that there was always the risk of their

reading something which might undesirably decondition one of their reflexes, yet . . . well, he couldn't understand about the flowers. Why go to the trouble of making it psychologically impossible for Deltas to like flowers ?

Patiently the D.H.C. explained. If the children were made to scream at the sight of a rose, that was on grounds of high economic policy. Not so very long ago (a century or thereabouts), Gammas, Deltas, even Epsilons, had been conditioned to like flowers—flowers in particular and wild nature in general. The idea was to make them want to be going out into the country at every available opportunity, and so compel them to consume transport.

'And didn't they consume transport ?' asked the student.

'Quite a lot,' the D.H.C. replied. 'But nothing else.'

Primroses and landscapes, he pointed out, have one grave defect : they are gratuitous. A love of nature keeps no factories busy. It was decided to abolish the love of nature, at any rate among the lower classes ; to abolish the love of nature, but not the tendency to consume transport. For of course it was essential that they should keep on going to the country, even though they hated it. The problem was to find an economically sounder reason for consuming transport than a mere affection for primroses and landscapes. It was duly found.

'We condition the masses to hate the country,' concluded the Director. 'But simultaneously we condition them to love all country sports. At the same time, we see to it that all country sports shall entail the use of elaborate apparatus. So that they

consume manufactured articles as well as transport. Hence those electric shocks.'

'I see,' said the student, and was silent, lost in admiration.

There was a silence; then, clearing his throat, 'Once upon a time,' the Director began, 'while Our Ford was still on earth, there was a little boy called Reuben Rabinovitch. Reuben was the child of Polish-speaking parents.' The Director interrupted himself. 'You know what Polish is, I suppose?'

'A dead language.'

'Like French and German,' added another student, officiously showing off his learning.

'And "parent"?' questioned the D.H.C.

There was an uneasy silence. Several of the boys blushed. They had not yet learned to draw the significant but often very fine distinction between smut and pure science. One, at last, had the courage to raise a hand.

'Human beings used to be . . .' he hesitated; the blood rushed to his cheeks. 'Well, they used to be viviparous.'

'Quite right.' The Director nodded approvingly.

'And when the babies were decanted . . .'

'"Born",' came the correction.

'Well, then they were the parents—I mean, not the babies, of course; the other ones.' The poor boy was overwhelmed with confusion.

'In brief,' the Director summed up, 'the parents were the father and the mother.' The smut that was really science fell with a crash into the boys' eye-avoiding silence. 'Mother,' he repeated loudly,

rubbing in the science; and, leaning back in his chair, 'These', he said gravely, 'are unpleasant facts; I know it. But, then, most historical facts are unpleasant.'

He returned to Little Reuben—to Little Reuben, in whose room, one evening, by an oversight, his father and mother (crash, crash!) happened to leave the radio turned on.

('For you must remember that in those days of gross viviparous reproduction, children were always brought up by their parents and not in State Conditioning Centres.')

While the child was asleep, a broadcast programme from London suddenly started to come through; and the next morning, to the astonishment of his parents, Little Reuben woke up repeating word for word a long lecture by that curious old writer ('one of the very few whose works have been permitted to come down to us'), George Bernard Shaw, who was speaking, according to a well-authenticated tradition, about his own genius. To little Reuben's parents this lecture was, of course, perfectly incomprehensible and, imagining that their child had suddenly gone mad, they sent for a doctor. He, fortunately, understood English, recognized the discourse as that which Shaw had broadcast the previous evening, realized the significance of what had happened, and sent a letter to the medical press about it.

'The principle of sleep-teaching, or hypnopædia, had been discovered.' The D.H.C. made an impressive pause.

'The case of Little Rueben occurred only twenty-three years after Our Ford's first T-Model was put on

the market.' (Here the Director made a sign of the T on his stomach and all the students reverently followed suit.) 'And yet . . .'

Furiously the students scribbled. 'Hypnopædia, first used officially in A.F. 214. Why not before? Two reasons. (*a*) . . .'

'These early experimenters', the D.H.C. was saying, 'were on the wrong track. They thought that hypnopædia could be made an instrument of intellectual education . . .'

(A small boy asleep on his right side, the right arm stuck out, the right hand hanging limp over the edge of the bed. Through a round grating in the side of a box a voice speaks softly.

'The Nile is the longest river in Africa and the second in length of all the rivers of the globe. Although falling short of the length of the Mississippi-Missouri, the Nile is at the head of all rivers as regards the length of its basin, which extends through 35 degrees of latitude...'

At breakfast the next morning, 'Tommy,' someone says, 'do you know which is the longest river in Africa?' A shaking of the head. 'But don't you remember something that begins: The Nile is the...'

'The - Nile - is - the - longest - river - in - Africa - and - the - second - in - length - of - all - the - rivers - of - the - globe...' The words come rushing out. 'Although - falling - short - of...'

'Well now, which is the longest river in Africa?' The eyes are blank. 'I don't know.'

'But the Nile, Tommy.'

'The - Nile - is - the - longest - river - in - Africa - and - the - second...'

'Then which river is the longest, Tommy ?'

Tommy bursts into tears. 'I don't know,' he howls.)

That howl, the Director made it plain, discouraged the earliest investigators. The experiments were abandoned. No further attempt was made to teach children the length of the Nile in their sleep. Quite rightly. You can't learn a science unless you know what it's all about.

'Whereas, if they'd only started on moral education,' said the Director leading the way towards the door. The students followed him, desperately scribbling as they walked and all the way up in the lift. 'Moral education, which ought never, in any circumstances, to be rational.'

'Silence, silence,' whispered a loud-speaker as they stepped out at the fourteenth floor, and 'Silence, silence,' the trumpet mouths indefatigably repeated at intervals down every corridor. The students and even the Director himself rose automatically to the tips of their toes. They were Alphas, of course; but even Alphas have been well conditioned. 'Silence, silence.' All the air of the fourteenth floor was sibilant with the categorical imperative.

Fifty yards of tiptoeing brought them to a door which the Director cautiously opened. They stepped over the threshold into the twilight of a shuttered dormitory. Eighty cots stood in a row against the wall. There was a sound of light regular breathing and a continuous murmur, as of very faint voices remotely whispering.

A nurse rose as they entered and came to attention before the Director.

'What's the lesson this afternoon ?' he asked.

'We had Elementary Sex for the first forty minutes,' she answered. 'But now it's switched over to Elementary Class Consciousness.'

The Director walked slowly down the long line of cots. Rosy and relaxed with sleep, eighty little boys and girls lay softly breathing. There was a whisper under every pillow. The D.H.C. halted and, bending over one of the little beds, listened attentively.

'Elementary Class Consciousness, did you say ? Let's have it repeated a little louder by the trumpet.'

At the end of the room a loud-speaker projected from the wall. The Director walked up to it and pressed a switch.

'. . . all wear green,' said a soft but very distinct voice, beginning in the middle of a sentence, 'and Delta children wear khaki. Oh no, I don't want to play with Delta children. And Epsilons are still worse. They're too stupid to be able to read or write. Besides, they wear black, which is such a beastly colour. I'm so glad I'm a Beta.'

There was a pause ; then the voice began again.

'Alpha children wear grey. They work much harder than we do, because they're so frightfully clever. I'm really awfully glad I'm a Beta because I don't work so hard. And then we are much better than the Gammas and Deltas. Gammas are stupid. They all wear green, and Delta children wear khaki. Oh no, I don't want to play with Delta children. And Epsilons are still worse. They're too stupid to be able . . .'

The Director pushed back the switch. The voice was silent. Only its thin ghost continued to mutter from beneath the eighty pillows.

'They'll have that repeated forty or fifty times more before they wake ; then again on Thursday, and again on Saturday. A hundred and twenty times three times a week for thirty months. After which they go on to a more advanced lesson.'

Roses and electric shocks, the khaki of Deltas and a whiff of asafœtida—wedded indissolubly before the child can speak. But wordless conditioning is crude and wholesale ; cannot inculcate the more complex courses of behaviour. For that there must be words, but words without reason. In brief, hypnopædia.

'The greatest moralizing and socializing force of all time.'

The students took it down in their little books. Straight from the horse's mouth.

Once more the Director touched the switch.

'. . . so frightfully clever,' the soft, insinuating, indefatigable voice was saying. 'I'm really awfully glad I'm a Beta, because . . .'

Not so much like drops of water, though water, it is true, can wear holes in the hardest granite ; rather, drops of liquid sealing-wax, drops that adhere, incrust, incorporate themselves with what they fall on, till finally the rock is all one scarlet blob.

'Till at last the child's mind *is* these suggestions, and the sum of the suggestions *is* the child's mind. And not the child's mind only. The adult's mind too—all his life long. The mind that judges and desires and decides—made up of these suggestions. But all these suggestions are *our* suggestions !' The Director almost shouted in his triumph. 'Suggestions

from the State.' He banged the nearest table. 'It therefore follows . . .'

A noise made him turn round.

'Oh, Ford!' he said in another tone, 'I've gone and woken the children.'

SECTION 6—THE FUTURE

We have just enjoyed (or shuddered at) a humorous picture of what life might be like under totalitarian rule. Now we shall turn to a more hopeful anticipation of our future. It tells us of the changes which a scientist expects to occur within your lifetime and mine. Such mastery has been obtained, he says, over the growth of plants and animals, and the production of new materials, that the time is near at hand when everything we need for satisfying our material requirements will be able to be produced by only a few hours' work per day. The vast increase in leisure which will then be available for all will create new problems. What will those problems be, and how will they be solved? Shall we go the way of *Brave New World,* or shall we find out what freedom really means, and how to preserve it for all, while ensuring still that all the necessary work of the world shall be properly done?

You may possibly find that your opinions differ strongly from those of this writer—or perhaps you will agree. Do not let yourself be either angered or carried away by the powerful and clever way in which he expresses his views. The value of a prophecy of this kind is just to stir up your own thoughts on the subject, to make you ask yourself whether *this* is what you want, and if not, then what, and why? Do not despise such thinking as mere day-dreaming. It is much more. It is the beginning of action. For 'ideas rule the world' and 'what a man thinks, that he becomes'.

EVERYDAY LIFE IN 1960

By John Langdon Davies

From *A Short History of the Future*

It is hard to imagine life in a world where common necessities cease to be a matter of effort or worry. We can only try to visualize it by analogy. Today there is no highly civilized country where a penniless man could possibly die of thirst ; water at least is provided to the destitute free of charge, as is also the air he breathes. But why shouldn't some enterprising merchant sell special air at a penny a lungful ? Absurd you say ? Well, it is quite possible that in twenty-five years' time it will seem just as absurd that there should ever have been a time when a destitute man could not get the bare minimum of the other things needed to keep body and soul together. We let our outcasts put their mouths below a tap of cold water ; there is every reason to believe that it will cost little more in twenty-five years for them to get carbohydrates, proteins and the rest in exactly the same way.

What makes it harder than necessary to visualize this state of affairs is that, as we are organized today, any new discovery which leads to cheapness and abundance automatically leaves ruin in its path. Our economists and politicians are wearing their lives out in the battle against abundance ; our farmers are praying for bad weather ; our moralists are deprecating thrift ; we all hope for higher prices ere long. But all this is an effort to put the clock of evolution back. We have new tools which have made

our old ways obsolete: instead of accepting that and changing our ways, we do our best to put the new tools out of action. We are like the razor-blade manufacturer buying up patents so as to keep the better blade off the market; he can only do it so long as a competitor does not break through. We can only do it so long as no community organizes to make the best use of increasing abundance. One community is already so organizing; and so the game is up.

It is clear that life in 1960 will be deprived of several things which seem most essential to life today. For whereas today work is the chief way by which mankind can fill time, there will soon be comparatively little work to do. Moreover, it requires a very powerful exercise of the imagination to think of everyday life passed in an atmosphere of complete abundance, and yet we have only begun to see that scarcity of necessities is a passing condition rapidly coming to an end.

If we are to try and understand life as it will be led in 1960 we must begin by realizing that food, clothing and shelter will cost as little as air. Science has simply to learn to change cellulose into foodstuffs at a negligible expenditure of human energy and we shall eat as we breathe. Science has only to go a few steps farther in mechanically producing textiles in factories where there is nothing to do but press a button, and we shall dress as do the lilies of the field. Society has only to have a strong enough control over the individual to limit population and there will be room for all, rent free.

It costs to live precisely what monopolists can force us to give for raw material, plus the human labour used to turn the raw material into useful objects. If

all monopolies are eliminated, if science turns every rubbish-heap into valuable raw material, if no human energy is wasted in silly methods of distribution, if manufacture is almost entirely a matter of machinery, the cost of living will be negligible. Only what still has a scarcity value will have to be paid for, and that will be little more than human inventiveness. The man who devises new machinery, the artist, the man with a genius for amusing the rest of us, in so far as they will need a material encouragement not to withhold their labour, these alone will be paid.

I do not say that such a state of affairs will be universal by 1960, but it is the condition towards which we are inevitably trending, a condition wherein our ordinary notions of labour and the rewards of labour will alike be meaningless. It is a state of affairs which will be denied and opposed by every traditionalist, just as today, when for the first time man is able to produce over-abundance of natural goods, the traditionalists cannot get out of their heads a picture of mankind starvingly wrestling with untamed nature, a picture which alone would justify orthodox methods of economic thought.

Now this condition of life is coming to our descendants as the result of the inevitable evolution of human tools ; and the benefits will be reaped by those communities that find themselves able to avail themselves most rapidly of these new tools. It is therefore of great interest to note that one of the changes that have come to capitalism in its present stage is that whereas once capitalism was admirably equipped to avail itself of every scientific advance, today capitalism is forced to retard and hold up scientific advance in many different directions. The capitalist

has reason to be afraid of the scientist although the scientist is his slave, for the scientist, the maker of tools, will in the end destroy capitalism with the tools he makes.

Thus the force which drives human evolution along its way in our time is a combination of the worker dispossessed by the machine and the scientist who makes the dispossessing machine. These two together find themselves thwarted by the vested interests which are holding up the remodelling of social forms to correspond with the requirements of the new tools. Together they are an invincible enemy of the *status quo*.

But a population of human beings remade by the State become super-biologist, and a world of such abundance that work and scarcity are reduced to a comparatively negligible part of human reckoning—these are but the raw material of the drama that is to be played. Drama past, present, and future is a matter of *human relationships*; and it is to a consideration of these that we must now turn.

Even the most rugged apostle of individualism admits that there are some whims of personal conduct that must be discouraged by society. Indeed, we find that the professional individualists, whose sole aim is to keep up the civil war of man with man within the social structure, are often the most straightlaced about all other conduct except economic licensed banditry. If a man feels that you should be ostracized for wearing a white tie with a dinner jacket, you may be quite sure that he will give his vote to the political party

that is most active in maintaining the jungle law of freedom in business.

The trouble with us in this Age of Stupidity is that we found our practice on a hotchpotch of irreconcilable ideas. The future is going to see these contradictory attitudes given up and a new start made with a new dogma, namely, that *a man may do anything at all provided it is not contrary to the good of the community* and *a man may do nothing at all that is contrary to the good of the community.*

Once this dogma is accepted there can no longer be any doubt as to the ethical validity of punishment or of what constitutes a crime. We shall all be like plants bearing leaves and buds, and society will be the gardener who will nip off the leaves and buds which are unnecessary or harmful to the growing of the sort of thing which from his point of view is considered the ideal vegetable. It is hardly necessary to say that such a prospect will not be universally popular.

What we all fear is that if crime is to be defined as an offence against the State and if the State is going to be the sole judge of what should be done with us, then we may disagree with the definition, and life may very well become not worth living. That is quite true. Life is not going to be worth living for quite a large number of people during the next twenty years. It would be easy to name a hundred prominent figures who are going to go down to their graves in a very discontented mood ; but we cannot hope that inexorable law will stay its hands to prevent this.

There is going to be a most interesting reshuffle of the actors who play the parts of criminals and of pillars of society. Indeed, the reshuffle has

already begun. Already quite orthodox German citizens have had to wake up to a new day when it is a crime to have had a non-Aryan grandmother ; English Quakers have been warned against quoting the Sermon on the Mount to members of His Majesty's forces ; Russians have been forced to regard every one of the acts that are considered virtues by American Chambers of Commerce as almost certain to land them in jail ; mild Catholic monks in Mexico and Spain, semi-detached from the interests of this world, have found that it is criminal for them to teach children the three Rs ; and finally, attempts have even been made in America to prevent small-town fathers from setting up as bankers and stealing other people's money, until the inevitable crash comes, and to prohibit convicts from using their prison cells as clearing-houses for a drug traffic distributed by carrier pigeon—but nothing much has come of these last experiments as yet.

Everywhere new crimes are coming into existence and old crimes are disappearing ; but in every case we find that the new emphasis is laid on the effect of individual acts upon the economic and political welfare of the community. We have taken our eyes out of their blinkers and no longer pretend that we are trying to safeguard eternal and absolute virtue ; justice has stepped down and social expediency has taken its place.

But when we say this, we are again speaking objectively and from outside. Your Russian jurist does not say that Soviet Justice is a mere social expediency ; he says it is the real justice in distinction from the false justice of the bourgeois. Your German or your Italian may sub-title his peculiar efforts in modern-

ism 'Roman Justice' and 'Aryan Justice', but he assumes that these things are the real eternal absolute IT and that all other systems are pale shadows or deliberate impostures. In short we have reached a time when the relativity of all human ideas has put the Platonist to rout. We know that there will never be any universal definition of the good and bad until mankind ceases to be divided into warring classes and warring nations. When that happens what will be the attitude towards crime and punishment?

Let it be said at once, that this attitude will not be arrived at through the detached thought of a group of humanitarians or expert psychologists or criminologists working at the problem without reference to the way in which their social and economic surroundings are developing. Society evolving according to inexorable natural law will tell the criminologists what they are to do about the soul, and the humanitarians what they are to do about humanity. We cannot repeat this too often.

When mankind has completed the transition, from social units wherein individuals are allowed to carry on civil war with one another to the harm of the State, to units wherein individual action will be permitted if it does no harm, many acts which are crimes today will cease to be crimes, and many acts today considered innocent will be heavily punished.

Putting the matter crudely: within a very short number of years a stock-broker and a burglar, who are today not on speaking terms, will be rubbing noses in one and the same concentration camp—unless they are skilful enough to change their professions, in which case either or both may be commissars. The keynote in the changing moral emphasis

will be a much more rigorous interference with human love of money, which as Mr Keynes has said, has been responsible for more human misery than sexual love. Instead of encouraging one human being in his efforts to exploit his neighbour economically, social justice will concentrate on preventing all such exploitation. The criminal will be the economic exploiter, the weakener of the social unit, the man whose actions hamper the social unit in its struggle for existence by keeping alive a parasitical struggle between individuals within the unit. This is the price man must pay for adopting the social habit as his chief tool in his fundamental task of surviving.

The reader will have come to the dismal conclusion that our generation looks like being the last before the extinction of the individual. Will this extinction be permanent or temporary ? It will be temporary. Human beings will become standardized for a time, but eventually the State will encourage individuality again along certain carefully controlled lines. Indeed, the inevitable warfare between the group and the individual that has produced the totalitarian State is due to a false and too early flowering of individualism, which was dangerous to the group and had therefore to be suppressed. Once the sting has been removed from individualism it can be allowed to flourish, since it is a normal requisite of life in all its forms.

When a biological type takes up the social habit it means that the unit which must be made strong to fight the battle for survival is the social unit. With-

in that unit there can be no civil war. Solitary animals may compete, but one cell must not compete with another within the body of the composite animal, and one individual must not compete with another individual within the group ; such competition would inevitably weaken the unity of the whole. Man is no exception to the working of this law. Ultimately all competition in an economic sphere between one man and another must weaken the efficiency of the community, a fact which becomes immediately apparent when another community enters the struggle free from this weakness.

In capitalist society the only kind of freedom and individualism that really appeals to the average man is freedom to carry on civil war against his fellow man in the economic sphere. In America today we are seeing some vociferous championing of a 'freedom', menaced, we are told, by the very mild reforms of the New Deal and its successors. If we analyse these cries for freedom we find that they are nothing more than a demand for the perpetuation of chartered brigandage. Freedom for Jones to be a Marxian and for Smith to be a Single-Taxer ? Freedom for you to like Browning and for me to prefer Walt Whitman ? Freedom for Mr X to bathe naked and for Miss Y not to believe in God ? Freedom for workers to organize to get better conditions of labour and for unemployed men to alter the conditions which lead to unemployment ? Not in the least ; simply freedom for the income-tax dodger to keep dodging ; for the employer of sweated labour to continue sweating his workers ; for the international banker to unload worthless bonds on the gullible public ; freedom for the conservative to stick to every

one of his prejudices. That is what the crusaders for freedom in America are after; the very things that weaken the community in its struggle for existence; the rugged individualism which makes of man so poor a practitioner of the art of being a social animal.

Nor is this an American phenomenon: throughout the world today reaction demands precisely the sort of freedom that unalterable, inexorable natural law condemns, and in order to get that freedom it is prepared to sacrifice those forms of freedom which alone give the whole process of evolution any meaning at all. Our prophecies have made it abundantly clear that future history will see this situation reversed: the freedom dear to professionally rugged individualists to batten economically on their fellows will be ruthlessly suppressed, in order that eventually true freedom may exist.

What, then, is true freedom? Not to have silly ideas about the nature of the universe we live in; not to misuse our minds about reality; not to make things easier for ourselves by exploiting the work and life-blood of others; not even to work ourselves to the bone in labours deleterious to the community—all these are the false freedom which inexorable law condemns. True freedom is a man's right to dream his own dreams in the spare time that socially organized labour gives him; to build his own private world of values; to decorate crude reality with his own phantasies.

Provided that in the common world of everyday reality he is himself a producer and that he does not

exploit the producing power of anyone else, then he will be left free over and above this to be an artist. The price which social habit, come into its own, demands, is that every individual gives up his freedom to struggle with his neighbour in the economic world; and the reward it offers for this self-denial is a greater freedom in the artist's world of dreams. Since capitalism has for its own end made art and creativeness unpopular, this exchange will not appeal to the majority of men whom capitalism has distorted. But mere unpopularity never affects inexorable law.

A man may choose his own medium within the recognized limits of choice; he may be an artist in the accepted sense of the word; or an artist in personal relationships; an artist in physical perfection, or as we say, an athlete; an artist in amusing his fellow creatures—so long as he does not set out to be a founder of a new religion, which is nothing else but subjecting others to the whims of your own imagination; so long as he does not use his art as a means of propaganda against the decrees of the social unit; so long as he does not claim for his art a validity in the world of real things, he will be allowed to dream and to create. Indeed, society ultimately exists for this purpose and no other, to make daily life run so smoothly that no one finds himself crippled in the life of his imagination. Art is not doomed by the coming of a fully developed social habit, it is transformed, purified and saved.

Last of all, what of religion?

It is a peculiarly false reading of history to suppose that the existence of religion is due to a clever

conspiracy on the part of vested interests. The fact that there always have been religions for which men have been willing to sacrifice themselves more readily than for any other cause shows that until human nature is completely changed there will be certain needs that can only be satisfied by religion of some sort or another.

It may not have a childish supernatural element; it may not be at loggerheads with all knowledge reasonably arrived at; it may not command obedience by ruthless hierarchies in this world and a system of rewards and punishments in another; but it will be there. It will be there to satisfy certain individual needs and to safeguard certain social demands.

A cold non-religious picture of life is a mental impossibility except at brief moments in the study of a scientist whom life is for the moment at least treating particularly well. We may contemplate peacefully the incontrovertible fact that according to the famous second law of thermo-dynamics everything in the universe must in the long run turn to dust and ashes, and we are in duty bound to accept this, when we are actually concerned with the scientific picture of the universe. But to eat, sleep and rest with that picture and no other is a mental impossibility. We must also have values and overbeliefs, none of which are scientifically valid. For a man to do without religion he must be healthy and attractive physically, he must have expectation of a long life, he must be in love with the right person and the right person must be in love with him, he must be economically secure, and a great many hidden things must have gone right with his unconscious experience from infancy up. Otherwise there will

be something for which he *must* compensate in some way or other.

In the future a great deal less will exist in everyday life needing compensation in the world of fantasy, because, as we have seen, the evolution of technology will have made personal relationships simpler and more satisfying; we shall supplement crude reality by finer loves and friendships. In the second place we shall find a more satisfactory means of compensation in an art purged of its present weakness; an art that does not offer us escapes from reality down debilitating and socially obnoxious paths; an art which is not concerned in hiding the social injustice upon which its leisured enjoyment depends; an art which is concerned not with putting up barriers between class and class, but with revealing and underlining the fundamental unity of all human beings. Such an art verges on religion; for religion is nothing but an artistic experience shared by a group of persons. The future of religion will have many resemblances to its original social form. There once was a time when no distinction existed between religion and politics, between religion and science, between religion and art, between religion and pleasure. It was only when religion began to be used as a weapon of class against class that it lost its universality. What this means we can dimly foresee from observing what is happening to religion in the totalitarian State of today. The claim that there cannot be a religion apart from the political and economic organization of the State is true; even though the countries such as Germany which are putting the idea into practice have incorporated into their neo-religion elements that are anti-evolution-

ary and therefore bound to lead to disaster. But a religion which is the organized mass feeling of the social unit, with its ritual, its methods of emotional intoxication, its code of honour, its aspirations for the unknowable future, its proofless dogmas, its hierarchy of saints, heroes and martyrs, all this will exist as long as man is an emotional animal. No one who has ever been in a crowd can deny it, least of all those who have experience, sympathetic or otherwise, of crowds of fascists or communists, the only really religious crowds that can be found in the world today. Clearly one of them represents a false religion, but which of them it is can only be decided by considering which has within its dogmas and emotional fantasies obedience to the inexorable laws of nature. When the social unit behaves in the world of reality in accordance with these inexorable laws, and adds to this behaviour a rich religious consciousness in the world of fantasy, where there exist overbeliefs and values that no microscope or test-tube can ever discover—then we have the social unit that is destined to carry through the impending dark ages the lighted torch of evolving humanity.

NOTES

Tom Brown at School

p. 2, line 4. *tootle-tooing away*: these were the days of travel by stage-coach, drawn by four horses. The guard used to sound a 'post-horn', a kind of long bugle or trumpet which made a sound expressed by 'tootle-too'. The guard being an uneducated man does not speak

grammatical English; he says 'tell'd' for 'told'.

line 11. *School-house*: in English public schools there are several 'houses', in each of which from thirty to sixty boys live in the charge of a resident master known as the 'housemaster'. In some schools the headmaster also supervises one of the houses, and that house is usually known as the 'School-house'.

p. 3, line 13. *fives court*: the game of fives, in which a small hard ball is struck against a wall with the palm of the hand, is a feature of most public schools.

line 18. *callings-over*: roll-calls.

line 24. *gigantic gallows*, etc.: the game of Rugby football was rather different at that time from the present game. The principal point of difference was that a large number of the smaller boys used to be crowded into the goal, to prevent the ball from being 'touched-down' behind the goal-line by the 'players-up' of the opposing side. In Rugby football, of course, the ball is carried in the hands as well as kicked.

p. 4, line 9. *scrummages*: usually shortened to 'scrum'. The forwards of the opposing sides pack themselves together into a group with heads down and arms round each other's shoulders; the ball is then put in, and both sides push towards it and try to get it out by kicking at it with their heels. Outside the scrum the half-backs are waiting to get hold of the ball as it comes out.

line 25. *præpostors*: prefects, senior boys entrusted with responsibility for order and discipline. One of the main features of the public schools is this entrusting of responsibility to senior boys, as a training in leadership.

line 34. *shell*: the class immediately below the fifth.

p. 5, line 22. *will-he, nill-he*: often written *willy-nilly*, meaning 'whether he wishes to or not'.

line 25. *carte blanche*: a French phrase meaning permission to do as one pleases.

line 29. *cut the match*: 'cut' is schoolboy slang for 'avoid'.

p. 6, line 9. *hanging their jackets . . . trees*: there were no special uniforms for games in those days.

line 18. *Warner*: head boy of the School-house.

line 27. *the Doctor sees nothing*: he takes no notice.

p. 7, line 10. *funk*: schoolboy slang for 'feel afraid'.

p. 8, line 5. *Flashman*: a big fifth-form boy, the worst bully in the school.

line 24. *what old Pater Brooke said*: Brooke senior was captain of the School-house football team; he is called 'pater' which is Latin for 'father'. At the celebration of their victory in the match, Brooke had said in his speech that the School-house would be still better if there were less bullying (ill-treatment) of small boys by bigger ones.

p. 11, line 29. *fagging*: fags were small boys who had to do menial work for sixth-form boys and præpostors.

p. 12, line 8. *buttery*: store-room for food-supplies.

line 8. *beer*: this was the common drink in those times, as tea and coffee were not so easily obtainable.

p. 13, line 6. *the accidence*: the inflexions of nouns and verbs, principally in the classical languages. In those days a very large portion of the academic work in English schools consisted in learning Latin and Greek, and Greek and Roman history.

line 23. *Ishmaelites*: outlaws.

p. 14, line 1. *licking*: schoolboy slang for 'beating'.

line 12. *the first occasion*: they got lost in 'hare-and-hounds' (cross-country run), were late for calling-over, and were sent up to the Doctor, who, instead of caning them as they expected, was very kind to them and gave them tea.

p. 16, line 15. *Nestor*: one of the oldest and wisest of the Greek leaders in the Trojan War. So it means here the most senior boy of the school.

p. 18, lines 10-11. *differences between University and School life*: because at the University there is much more freedom for a student to work, to organize his own studies, or to idle, than at school where the discipline is stricter.

p. 19, line 27. *the great headmaster*: Dr Thomas Arnold, the headmaster who figures in this story, became head of Rugby School in 1828, and was there till 1841 when he was appointed Regius Professor of Modern History at Oxford. He died in the following year. His son was Matthew Arnold, the poet. Arnold believed that it was not enough

to teach obedience and the elements of Latin and Greek, but that a public school should be the training-ground of character, and fit boys for the wider responsibilities of University life and whatever career they took to. He effected great changes in Rugby School by his devotion to his task. He drew out the best in many boys by his policy of trusting them with responsibility and appealing to their sense of honour. Like all reformers he was hotly criticized by educationists of a more conservative outlook, but the condition in which he left Rugby was the best proof of his ability, and the methods he used were soon introduced into other public schools.

The story of Tom Brown is, of course, fictitious, but it is based on actual happenings, the author, Thomas Hughes, having been himself a boy under Arnold at Rugby. It is one of the most famous stories of school-life.

Training for Leadership

Sir Sarvepalli Radhakrishnan, who delivered this brilliant address at the Convocation of the University of the Punjab in 1930, is a great scholar and philosopher, and, what is unusual in a philosopher, he is a brilliant orator and has a marvellous command of the English language. An extempore speech by him is a wonder and a delight to listen to. From that point of view, we cannot fully appreciate his genius from reading this prepared oration. But his words are as wise as they are eloquent, and he speaks with the authority of one who has had experience of many Universities, both foreign and Indian.

p. 24, line 6. *make . . . Russian soul*: slavishly imitate British or Russian political institutions.

line 17. *Karl Marx*: German Socialist; *Tolstoy*: Russian pacifist; *Romain Rolland*: French pacifist; *Bertrand Russell*: British mathematician, socialist and pacifist.

p. 27, line 1. *The State . . . writ large*: as a nation is composed of individuals, it cannot be more advanced (in culture, political institutions, etc.) than the individuals who compose it.

line 9. *community*: used here in the abstract sense of 'common possession'.

lines 17-18. *Communism . . . infidelity*: in totalitarian States the political creed of the rulers must be accepted by all, and the expression of any other opinions by individuals is regarded (and treated) as disloyalty.

lines 18-19. *When States . . . churches*: when a number of people unite in support of ideas in which they believe strongly (such as a religion), there is nearly always a tendency for them to try to compel others to accept their views, and to persecute any departure from orthodoxy. In the past it has been mainly religious organizations (churches) that have been so rigid; nowadays, owing to the spread of totalitarianism, Governments are endeavouring to coerce their subjects into political uniformity, and the writer argues that unless the Universities encourage the study of all varieties of opinion, liberty of thought will be lost.

line 29. *An extramural department*: a department for arranging courses outside the walls of the Universities, extension lectures, adult education centres and so on.

lines 32-3. *industrialists' autocracy . . . obscurantism*: business men sometimes oppose higher education on the grounds that what the country needs is competent workmen and efficient technicians, so that vast quantities of material necessities may be produced quickly and cheaply (with larger profits for business men, incidentally). In this connexion see the Introduction to Section 2, Science Today. 'Obscurantism' means opposition to the spread of knowledge. Where the main object is to secure docile mechanical labour, it is likely that an education which teaches men to think for themselves will be discouraged.

p. 28, lines 20-1. *criminal . . . thumb-prints*: the markings to the skin of no two human beings being exactly alike, men can be positively identified by their finger-prints. This fact is made use of for the purpose of identifying criminals. The author uses this as an illustration of the argument that every human being is unique in some way or other and often possesses remarkable possibilities if only we take the trouble to discover them and draw them out.

p. 29, lines 2-4. *The trouble . . . political motives*: it is easy to find points of agreement in abstractions such as

philosophy and art; the real difficulties arise when Hindus and Muslims, Indians and British, or any people whose interests are not identical, have to arrive at decisions on questions of everyday life and livelihood. It is then that it is most necessary that we should try to understand the other man's point of view.

lines 8-9. *not incommunicable . . . teachers*: this is why progress depends more upon the kind of men and women we recruit as teachers in our schools and Universities, than upon the grand buildings in which they are housed. This was realized in India in former times when students gathered to learn from a teacher in the outbuildings of a temple or a mosque, or even under a tree. It was the personality of the teacher which counted, not the place where he taught.

p. 29, line 31—p. 30, line 5. *tapas . . . The best work in the world*: for a further commentary on this theme, see the magnificent Chapter 3 of the *Bhagavad Gita*, a clarion call to right action as inspiring to any man, whatever his religion, as it was to Arjun in his 'great struggle'.

The Wonders of Egypt

p. 33, lines 1-2. *Psammetichus*: the first king of this name, in 664 B.C. freed Egypt from foreign rule (it had been under Ethiopian and Assyrian domination for 150 years) and founded the XXVIth dynasty of Egyptian kings which lasted about 100 years. It was the last flicker of the greatness of ancient Egypt, which after this period was conquered first by the Persians, then by Alexander the Great, then by the Romans, and, much later, by the Muslims.

line 6. *Phrygians*: a people akin to the Greeks. They occupied the south-west portion of Asia Minor. The test of language, herein described, is of course quite unscientific according to modern standards. The Egyptians were really of much more ancient origin, as a civilized nation, than the Phrygians.

p. 34, line 29. *the summer solstice*: i.e. June 21st.

line 28. *Etesian winds*: winds which blow every year (from Greek '*etos*'=year) for a few weeks from the north towards the Sahara and Libyan deserts; they are

due to the air rising over the deserts owing to the increasing heat of summer.

p. 35, lines 30-1. *the ocean flows all round the earth*: the Greeks had no idea that a great part of Africa extends south of the Sahara. They believed that a great ocean surrounded the entire land mass of Europe, Africa and Asia, and that the east coast of India continued northwards to join up with the north coast of eastern Europe. In a land mass of this shape it is obvious that the Mediterranean Sea would occupy roughly the centre, whence its name. The existence of the Americas and Australia was unsuspected. See Map on page 32.

p. 36, line 4. *the Nile flows out of Libya*: nowadays the name Libya is restricted to that portion of North Africa between Egypt and Algeria, but to the Greeks it meant the whole of North Africa. Ethiopia also included much more than modern Abyssinia; it included most of what is now the Anglo-Egyptian Sudan. It was vaguely believed that the Nile had its source somewhere in the south-west of 'Libya' and that it flowed eastwards towards Ethiopia and then northwards through Egypt. As Libya was known to be very hot and dry, it was a mystery where the Nile obtained its water. Its actual sources, that of the Blue Nile and Atbara in Abyssinia, and that of the White Nile in the Victoria Nyanza, were not definitely determined until 1770 and 1858 respectively by Bruce and Speke. Although not snow-fed like the rivers flowing from the Himalayas, the Nile does rise in regions surrounded by mountains where snow lies, but this was unknown to the Egyptians.

lines 13-14. *whenever snow falls . . . five days*: this is not a fact; the idea may have arisen because southern Europe does not have any very long spells of snowfall.

p. 37, lines 4-5. *During the winter . . . by the storms*: in the Mediterranean region, winter is the rainy season, and the summer is dry. Of course, Herodotus' explanation is quite wrong. The sun does appear to move southwards ('to the upper parts of Libya') but, as we know, this is due to the revolution of the earth, and not to storms!

lines 12 ff. *the case is this . . . phenomenon*: if this

paragraph is read carefully it will be noticed what a strange mixture of careful observation and wrong theory it is. Herodotus is right in saying that the sun's heat draws up moisture, and that the rain-bearing south-west winds get their moisture from this source. But the variation in the quantity of water in the Nile is not due to the attraction of the sun, but the fact that the source of its flood-waters is in a summer-rain region, Abyssinia. Without this knowledge Herodotus could not arrive at the correct explanation, and we can only admire his ingenuity in trying to solve the problem with such knowledge as he had from his own observations and study.

p. 38, line 11. *crocodile*: the word is from the Greek word for 'lizard' as crocodiles are like immense lizards. This passage is remarkable for the correctness of its observations. As crocodiles were quite unknown in Europe, it is not surprising that many people thought that Herodotus was just telling 'travellers' tales' when he described such peculiar creatures. But in most cases where Herodotus was describing things he actually saw for himself, it has been found that he was a careful and accurate observer.

line 30. *In the water it is blind*: this is incorrect, but its eyes are very small compared with its size.

p. 39, line 12. *Thebes*: one of the earliest and most famous cities of ancient Egypt, and for a long time the capital also. It is situated nearly 400 miles up the Nile, in Upper Egypt. The ruins of the great temples of Karnak and Luxor are near by.

line 13. *Lake Mœris*: near modern Cairo.

Modern Scientific Discoveries

p. 47, line 31. *Ramsay*: Sir William Ramsay, famous British scientist, discoverer of argon and other rare gases. He was awarded the Nobel prize for chemistry in 1904; died 1916.

line 33. *Leyden*: the great University of Holland.

p. 48, line 8. *the H. G. Wells school*: Wells has written several famous books describing possible future conditions on the earth in the event of certain scientific discoveries;

e.g. *The Time Machine, In the Days of the Comet, New Worlds for Old, The Shape of Things to Come*, etc. *Last and First Men* (Pelican books, No. 3) by Olaf Stapledon is of the same type.

p. 51, lines 29-30. *the mind of an Early Briton*, i.e. a very primitive intelligence, not inclined to receive new ideas.

p. 52, lines 16-17. *the how . . . the why*: for example, farmers knew that you cannot continue to get good crops on the same land unless you manure it, rotate the crops, or leave it fallow for some time. But they did not know *why* this was so. At first, scientists thought that, as the necessary substances had to be replaced in the soil, it would suffice if chemical manure were put in every year. But experience has shown that this sometimes does harm. We have to find out 'how' to do the work, not only 'why'.

lines 26-7. *healthy plants and animals*: e.g. wheat which resists disease, and cows which produce more milk.

p. 53, lines 9-10. *spring, summer, winter*: it must be remembered that the seasons in western Europe are quite different from ours: *spring* is the season of showers and of the fresh growth of plants; then follows *summer*, also damp but warmer, the season of flowers; *autumn*, which follows summer, is usually drier, and is the harvest season of crops and fruits; finally *winter*, when the cold prevents growth. The long grass which has grown up in the spring and summer is cut and dried (into 'hay') in the early autumn (August).

The Last Days of Pompeii

p. 57, line 2. *Pompeii*: situated right at the foot of the volcano, Vesuvius, on very fertile soil, Pompeii was a centre of vine-growing and wine-making, and became a fashionable place for wealthy Romans to build their country houses, at the time when the Roman Empire was at its height under Augustus Cæsar. In A.D. 79 there was a terrific eruption of Vesuvius (which had previously not been active for a long time) and the entire city, as well as neighbouring villages, was buried in the showers of red-hot stones, cinders and ash which poured out of the volcano. It remained unexcavated until about a century

ago, when archæologists began to dig out the ruins. The whole of the ancient city, with its great amphitheatre, has now been uncovered, and many things of interest have been found exactly as they were left by the terrified inhabitants nearly 2,000 years ago. From these we can learn a great deal about the way in which the Romans lived.

p. 58, line 3. *the waves of the sea*: the first signs of the volcanic outburst may have been an earthquake under the adjoining sea, which would of course produce waves.

line 15. *Arbaces*: see summary of the story in the Introduction.

line 17. *half gown, half mantle*: a sort of sleeveless coat, hanging from the shoulders to the knees.

line 18. *Tyrian dye*: the city of Tyre was noted for the purple dye made there.

p. 59, lines 5-6. *senatorial or equestrian dignity*: those of high rank either because they were members of the Roman senate, or noblemen of high birth (Latin, *eques,* a knight or nobleman).

line 17. *invisible pipes*: pipes pierced with small holes at intervals, through which scented water could be sprayed (as water is sprayed on 'tatties' in the summer in north India). The pipes were invisible because fixed in the plaster of the walls.

line 26. *wagers*: betting was an added excitement, as it is in modern horse-racing

line 28. *Pansa*: the ædile or magistrate. The ædiles were elected, and Pansa had arranged this show in order to keep in favour with the people, to secure re-election.

p. 60, line 19. *cestus*: leather coverings worn on the fists, for boxing. But whereas in modern boxing the gloves are padded to soften the blows, the Greek and Roman gloves were often weighted with lead to make the blows heavier. Such contests were therefore often fatal.

p. 61, line 4. *the execution of Olinthus and Glaucus*: these two prisoners had been condemned to be put in the arena with hungry lions and tigers.

line 10. *Nazarene*: follower of Jesus of Nazareth, i.e. Christian.

lines 19-20. *comparatively humane*: (ironical) merciful in comparison with the shows given at Rome.

line 21. *microcosm*: counterpart on a small scale.

p. 63, line 25. *iron and compact*: strong and well-knit.

p. 64, line 5. *my bronzes go to the auctioneer*: I shall have to sell my valuable ornaments to raise money to pay my debts.

line 17. *sestertia*: Roman coins. A sestertius was worth about two annas.

line 32. *habet*: (Latin) = 'he has it', i.e. he has received a knock-out blow.

p. 66, lines 24-5. *the signal of charity and life*: if the people wanted the winner to spare the life of his defeated opponent, they held out their fists with the thumb pointing upwards. If they wanted his death, they held 'thumbs down'.

p. 68, line 14. *stilus*: small sharp-pointed instrument, which was all that was allowed for self-defence against the lion.

lines 17-19. *The lion . . . restless*: it is a well-known fact that animals (particularly birds) possess an instinct that warns them of impending catastrophes such as storms and earthquakes.

p. 70, line 7. *prœtor*: the chief magistrate, the officer in charge of law and order.

p. 71, lines 14-15. *the peculiar constitution of the Roman province*: although the Roman Empire was at its height, it had really begun to decay inwardly, because successful conquests had flooded the country with slaves, and returning soldiers preferred the enjoyment of amusements of this kind in the cities to hard work on their farms. The great majority of those who frequented gladiatorial shows were therefore men whose discipline was only outward; when their passions were aroused, they became a savage mob.

p. 72, lines 2-3. *avenging Orcus*: the god of the underworld, or hell. The cunning Arbaces, seeing that Vesuvius had begun to erupt, played upon the superstitions of the mob, saying that the eruption was to punish them for

attacking him, a priest, and (as he alleged) an innocent man.

line 18. *wild prophets of the wrath to come*: see note on p. 68, line 14.

Run Out

p. 76, line 2. *bonhomie*: geniality, friendliness. It was a 'false' geniality because the opponents felt that Sir Anstruther was boasting of the fact that his team had begun by getting 204 runs for only two wickets, and had tired out the Finchman bowlers.

lines 28-31. *Merton . . . Boone*: George's butler, Merton, was umpiring at one end, an Sir Anstruther's man, Boone, at the other. So if Merton favoured his master's side by giving doubtful l.b.w. decisions against batsmen of the other side, Boone might easily do the same when George's men came in to bat.

p. 77, lines 3-4. *no bowler . . . more than three wickets*: showing that there was no outstandingly good bowling to explain the opponents' collapse.

line 9. *while the shine's still on the ball*: a fast bowler can get more spin on a ball of which the stitching is still prominent, i.e. a ball not much used and therefore still shiny.

lines 10-14. *Rawstone . . . on the splice*: a good batsman going in late may be very useful either to hit up runs quickly to force a win, or to hold on to his wicket if another fast scorer is playing or if it is necessary to play for a drawn match.

line 29. *flick at that off-ball*: a rising ball on the off side is tempting to hit, and dangerous if it is spinning, because it may then be just tipped and go for a catch into the hands of the fielder in the slips.

p. 78, line 11. *yorker*: a ball that pitches immediately under the bat, and is therefore difficult to stop, if the batsman hesitates whether to play forward or back to it.

line 13. *half-volley*: a ball hit just after it has bounced travels particularly fast. This is called taking it on the 'half-volley'.

p. 80, line 13. *the hands of Esau*: a reference to the

story in the *Bible* where Jacob deceives his blind father into mistaking him for the eldest son, Esau, *see* Genesis, ch. 27, v. 22. Here Johnny means that he got caught out not simply because the fielder held the catch, but because the Colonel had annoyed him so that he hit out rashly.

p. 82, line 16. *reorganized his field*: Johnny being a good fielder, Sir Anstruther made full use of him by putting him in a key position.

line 27. *the Fighting Temeraire*: the famous old wooden battleship depicted in a fine picture by J. M. W. Turner.

p. 83, line 17. *old crocks*: the Colonel did not appreciate being placed in this category along with the Admiral!

p. 84, lines 12-13. *post-mortem*: examination of a dead body; the term is here used humorously for the *discussion* that took place after the event.

p. 85, lines 30-1. *the manner of the quarterdeck*: the quarterdeck is the portion of the ship from which the captain commands it; the 'manner of the quarterdeck' therefore means 'an authcritative way of speaking' (which of course the Colonel resented).

p. 87, line 28. *with barefaced effrontery*: with open shamelessness. The Admiral had also called 'tails', but he pretended that he had simply repeated the Colonel's call, and, to make matters worse, he insulted the Colonel by suggesting that he would have changed his call at the last moment if the Admiral had not checked him.

p. 88, line 26. *two minutes' rule*: when a batsman is out, the next man must go in to bat within two minutes. The quarrel had taken up more than that amount of time.

p. 89, lines 8-9. *flail-like movement*: the swing of the arms necessary when one wields a flail (for thrashing grain), but not quite the best action to employ with a cricket-bat!

line 18. *spreadeagled*: flattened out in opposite directions. The word comes from the figure of an eagle with extended wings which is the emblem of certain nations, e.g. the U.S.A.

NATIONALITY AND DEMOCRACY

p. 91, line 18. *Flemish and Walloon provinces*: the northern part of Belgium, known as Flanders, is inhabited by people who speak Flemish, a language akin to Dutch; the people of the south and east are called Walloons, and their language is akin to French. Yet both groups prefer to remain united to each other rather than join Holland or France.

line 28. *portions of the German name*: in reading this paragraph it must be kept in mind that Mill wrote this essay in 1861, i.e. before Bismarck defeated France and Austria and compelled the German States to unite under the leadership of Prussia.

p. 92, lines 8-9. *the great events now passing before us*: it was in 1861, that, mainly due to the heroic efforts of Garibaldi, the whole of Italy was united under King Victor Emmanuel II, grandfather of the present king of Italy.

line 16. *prima facie*: at first sight, perfectly clear.

p. 94, lines 14-15. *keeping its Hungarian regiments in Italy and its Italian in Hungary*: this is a reference to the policy of the Government of Austria-Hungary, which controlled a great part of Central Europe and part of the Balkans, up to 1918. When its army consists of men of the people governed, a Government cannot be over-tyrannical lest the army itself refuses to obey orders to terrorize the people into submission; but an army of foreign soldiers has no such scruples.

p. 95, line 11. *Vienna insurrection and the Hungarian contest*: in 1848 there occurred a revolutionary uprising in Austria and a Hungarian revolt against Austrian rule. The Austrian movement was crushed partly with the help of Hungarians, and the Hungarians were defeated by a combination of Austrian and Russian troops.

line 21. *geographical hindrances*: this paragraph is of topical interest today because the very same difficulties were made a pretext of aggression by Hitler.

p. 96, line 8. *Courland, Esthonia and Livonia*: included in modern Latvia and Estonia.

p. 97, lines 15-16. *absorption of Greece by Macedonia*:

through the conquests of Philip of Macedon and his son Alexander.

lines 15-16. *the State Church*: before Ireland attained Dominion Status, the Church of England was the 'established' church, though the majority of the Irish were Roman Catholics. But even in England there are many Roman Catholics, though the State Church is the Anglican one, the Church of England.

p. 100, line 11. *Italian province under a French or German yoke*: before Italy was united in 1861, a large part of the northern provinces had been ruled by the French, and, after Napoleon's fall, Lombardy, Venetia and Dalmatia were all put under Austrian rule.

Racialism and Science

p. 101, line 9. *pseudo-*: sham, false.

line 10. *to rationalize emotion*: to justify strong feelings by inventing a rational basis for them (as we nearly all do, in defence of our favourite prejudices).

p. 102, line 17. *recognizable physical type*: which can be identified by physical features (such as shape of face, eyes, colour, hair, etc.).

lines 25-6. *Aryan, Latin*: these are the names of language-groups, not races.

line 28. *genetics*: the study of heredity and human variations.

p. 103, lines 29-30. *pigmented*: coloured.

p. 104, line 4. *Mendel's great discoveries*: the great Austrian biologist, Gregor Mendel (1822-84), was the discoverer of certain principles of inter-breeding which have been made the basis of all subsequent studies in heredity, as well as of the modern practices of improving the breed of plants and animals. Mendel's work remained unknown to the world until 1900. The principles that he enunciated are now known as 'Mendelism'.

line 11. *discrete*: separate, distinct. (Distinguish from 'discreet').

p. 105, line 1. *in the absence of social or natural selection*: i.e. if no conditions of society or climate make it difficult for any particular type to survive. For example,

it is possible that a very hot damp climate may tend to favour the survival of those with dark skins as against those with fair skins.

p. 106, line 24. *the spread of mutant genes*: i.e. when genes having the latent possibilities of certain new characteristics are transmitted from one generation to another, the new characteristics appear more and more widely.

p. 115, line 7. *eugenist*: one who is trying to improve the species.

line 23. *miscegenation*: mixing of races, by inter-marriage.

p. 117, lines 3-4. *claims . . . absolute sovereign rights*: so long as each nation claims, not only to decide what is good for it regardless of how others are affected, but also to act as judge of its own case when an international dispute arises, there cannot be peace. Some international body to decide disputes and to enforce its decisions on disputants seems essential. The League of Nations provided the former but not the latter.

The Battle of Marathon

p. 119, line 2. *Darius*: About 600 B.C. the Babylonian empire, which had reached a high state of civilization, was invaded and conquered by the Medes and the Persians, a branch of the same Aryan people who invaded India at least 1,000 years earlier, and some of whom had already moved into Europe to settle in the Balkan peninsula and the surrounding coastal areas and islands of the eastern Mediterranean. Cyrus the Persian was the leader who conquered Babylon. His son Cambyses conquered Egypt, and on Cambyses' death he was succeeded by Darius I (who had been one of Cyrus' councillors). Darius thus succeeded to one of the largest empires ever known in the Middle East, extending from the Indus to the Nile, and from the Caucasus to Ethiopia.

lines 3-10. *Assyrians*, living on the upper Tigris; *Syrians*, in the north of Palestine; *Chaldees*, early inhabitants of Babylonia; *Armenians*, living in the mountainous region south of the Caucasus; *Bactrians*, living in the country now called Afghanistan; *Lydians*, living in the

south-west corner of Asia Minor; *Phrygians,* living in the north part of Asia Minor; *Parthians,* a Mongolian people living round the Aral Sea; *Medes,* an Aryan people living in the west of Persia, south of the Caspian Sea.

p. 120, line 10. *Peneus*: a river in south-west Greece.

line 15. *Ionia*: the western portion of Asia Minor. The Ionian Greeks had been conquered by Cyrus, and their territory had been incorporated into the Persian satrapy (province) of Lydia, whose capital city was Sardis, and whose satrap (governor) was Artaphernes, a relative of Darius. About this time the Athenian Greeks had established democratic rule in Athens by driving out Hippias, the tyrant who had established himself over them. This Hippias sought refuge in Sardis where he tried to persuade the Persians to invade Greece. What happened is related in the text of this passage.

p. 121, line 2. *Aleian plain*: in eastern Asia Minor.

p. 123, line 2. *Eretria*: on the island (Eubœa) close to the eastern shore of Greece. It should be remembered that the Greeks were not a united nation; each Greek city was a small state in itself, proud of its independence and self-government. They often fought each other; they were in alliance only against the common foe, the Persians.

line 9. *Miltiades*: one of the ten generals elected by the Athenians to conduct the campaign. There were ten principal tribes, and each tribe elected one general to lead the men of that tribe. The ten generals, with one other Athenian elected for one year only as a kind of minister of war, formed the Council of War. The Council agreed to the plan proposed by Miltiades, to attack the Persians at Marathon, and placed him in charge of the operation as a whole.

line 12. *Lacedœmon*: Sparta. The Spartans were noted for their bravery, and the rigorous training of their children.

line 24. *Rome*: Aryan tribes, akin to the Greeks, had by the year 1000 B.C. immigrated into Italy and intermarried with the aboriginal inhabitants. Their language was Latin. North Italy was already occupied by an earlier people, the Etruscans, of whose origin very little is known, but they may have come from Asia Minor. Rome sprang

up at the ford on the river Tiber where the Etruscan and Latin territories met. For a time Rome was ruled by Etruscan usurpers, and it was just before the date of the battle of Marathon that the Romans had driven out their Etruscan kings, and set up a republic.

p. 124, line 5. *Ormuzd*: the principle of Good, in the ancient Persian religion founded by the prophet Zoroaster or Zarathushtra about 800 B.C. This religion is now followed by the Parsees, Persians who fled to India when Persia was invaded by the Muslims in the 7th century A.D.

line 9. *Chersonese*: the peninsula of Gallipoli on the north side of the Bosphorus. Miltiades, though an Athenian citizen, was also ruler of lands in the Chersonese which had descended to him from his father. When Darius invaded Europe on the occasion of his first expedition, he conquered the whole of this region right up to the Danube (he actually crossed the Danube and marched into Scythia, now called the Ukraine). Miltiades had to submit, and for a time he served in the Persian army; so he knew its strong and weak points from personal experience. Later he escaped to Athens.

line 15. *Kurdistan*: the mountainous region between the Caspian Sea and Mesopotamia. *Persia Proper* is the plateau of Iran, to the east of this. *Cyrus,* see first note on this extract.

line 21: *Greek armour*: the Greeks were not only very hardy and physically fit as a result of their regular gymnastic exercises and athletic contests (the Olympic games were held every four years), but they were armed with breast-plate, helmet, greaves (shin-guards), shield, spear, and shot sword. The Persians carried only a wicker shield and were without body-armour. They relied greatly on the ability of their cavalry to break up the ranks of the enemy: coming from a horse-breeding country they were naturally fine horsemen.

p. 125, line 27. *Hercules*: the mighty hero of the Twelve Labours, later deified. He was to the Greeks what Hanuman was to the men of Shivaji.

line 31. *Heraclidæ*: according to legend the descendants of Hercules (Heraclidæ) reconquered the southern part of

Greece over which the tyrant Eurystheus had usurped dominion.

p. 126, line 14. *The War-Ruler*: this was the eleventh member of the Council of War referred to in the note on Miltiades, p. 195.

line 15. *Platœans*: inhabitants of the region immediately to the north-west of Athens.

line 18. *Iphicrates*: a Greek general of about a century later, who reorganized the Athenian army, making greater use of light-armed forces.

p. 127, line 19. *Æschylus*: the great Greek tragic poet.

line 11. *palœstra*: the schools of wrestling and athletics.

p. 128, line 15. *Hyrcania*: south-east of the Caspian Sea; *Khorasan,* the north-eastern province of Persia, between Hyrcania and Bactria (Afghanistan).

line 29. *targets*: circular shields with a boss in the centre.

p. 129, line 3. *Sacœ*: Scythians of northern Persia, the region which is now Russian Turkestan.

p. 132, line 6. *Acropolis*: the citadel of Athens, on which the Parthenon and other famous buildings are.

line 13. *Phidias*: the sculptor who designed many of the finest of the Athenian buildings and made some of the most beautiful statues. *Pericles,* ruler of Athens at the height of its greatness, soon after Marathon.

line 18. *Olympiads*: the Olympic games were held every four years, so an Olympiad is a period of four years reckoned from the supposed date of the first Olympic contest, in 776 B.C.

p. 133, line 3. *Xerxes*: son of Darius, tried to avenge the defeat of the Persians, ten years later. He actually succeeded in capturing and burning Athens, but the Athenians took to their ships and inflicted a disastrous naval defeat on the Persians at Salamis, which forced them to retire into Thessaly (the region round Salonika). Here, in the next year, the Greeks defeated them on land also, and they never again attempted to invade Europe. The tables were turned when Alexander, 150 years later, conquered the whole of the Persian empire. But the real importance of these military victories lay in the fact that

Greek freedom was preserved long enough for Greek culture to rise to its height, and spread both west and east.

The Battle of Britain

p. 135, line 27. *white vapour trails . . . tiny specks*: the aeroplanes flew so high that they appeared as specks; they left trails of white vapour, blown into different shapes by the wind.

line 32. *chatter*: the sound of machine-guns fired from the fighter planes against the German bombers.

p. 136, line 4. *Warsaw or Rotterdam*: these cities suffered terribly because they had insufficient fighter planes to drive off the attackers; Rotterdam was almost undefended.

line 6. *end the war*: in September 1940 the German broadcasters were boasting that the British would collapse within a few weeks.

p. 137, line 16. *Luftwaffe*: the German Air Force, commanded by Marshal Gœring.

p. 137, line 30—p. 138, line 1. *bombers, fighters*: bombers are large aeroplanes, to carry heavy loads of bombs; they are not so fast as fighters, and are not so heavily armed: they carry a crew of from four to six men. Fighters are smaller, faster, heavily armed planes, carrying one or two men only. Their speed is tremendous; it may be nearly 400 m.p.h. They must be able to climb to a great height and turn sharply. They carry a large number of guns, which can be concentrated upon an enemy, and fired automatically. *Dive-bombers* are light bombers which can come down swiftly to drop their bombs from a very low altitude (as close as fifty feet); in doing this they are of course more liable to be hit by the opposing anti-aircraft defences. See *The Military Aeroplane*, a recent Oxford Pamphlet on World Affairs by E. C. Shepherd.

p. 138, line 31. *Hurricanes*: Hurricanes and Spitfires were the two famous types of fighter aeroplanes used by the British. Both are single-seater, all-metal monoplanes, with Rolls-Royce engines, capable of a speed of well over 350 m.p.h. They are armed with eight Browning machine-guns, four in each wing, firing all together automatically

when a firing-button is pressed. The bullets all converge to a point ahead of the aeroplane, so the pilot waits till the opposing plane is straight ahead of him, and then fires.

p. 139, line 17. *to deal with fighter aerodromes*: if the enemy's aerodromes can be made unusable, his planes have nowhere to land and refuel.

p. 140, line 9. *sixty pilots were safe*: the crew of a disabled plane can often escape by parachute if they are over their own country. The Germans had not this advantage.

line 26. *diversionary attacks*: attacks made at places far apart, with the object of diverting fighters from the main targets of London and other vital spots.

lines 29-30. *escorting fighters*: bombers are usually accompanied by fighters to protect them from enemy fighters.

p. 141, line 12. *long-range bombers*: these have to be big machines, to carry petrol for flights of long duration.

p. 142, line 30. *Marshal Ney at Waterloo*: unless the infantry can follow up a cavalry attack which has shaken the opponent's defences, it is largely useless.

p. 144, line 30. *1666*: when the Great Fire of London took place, in which a great part of the city was destroyed.

p. 145, line 5. *wishful thinking*: making statements which are not true but are what one wishes to happen.

p. 148, line 3. *fighter bombers*: fighters adapted for carrying bombs. These are naturally swifter but unable to carry such a heavy weight of bombs as the big bombers.

p. 152, line 3. *ailerons*: the movable part of the wing of an aeroplane, which helps to stabilize it.

line 4. *glycol*: ethyl alcohol, a synthetic fuel used in place of petrol.

line 16. *the Marne*: the battle in which the German armies invading France in 1914 were checked. Likewise Marathon saved Greece from Persian invasion, and Trafalgar saved England from invasion by Napoleon.

Brave New World

p. 154, line 1. *only thirty-four stories*: in a world where most of the buildings are presumed to be very high, thirty-four stories is below the average.

line 3. CONDITIONING CENTRE: see last paragraph of the Introduction to this extract.

line 4. *the World State's motto*: our author imagines that the whole world has been brought under one government; its motto is satirically given as '*Community, Identity, Stability*', i.e. everything is for the State, individuals are required to conform to the prescribed standards, and changes are not encouraged.

line 7. *the D.H.C.*: in this extract we are given a picture of the Director of Hatcheries and Conditioning taking a party of students round his department, as a part of their training as 'Alpha-Plus intellectuals', i.e. the human group born and bred for leadership. He has already shown them the Hatchery, where artificially fertilized human ova are submitted to conditioning which fits them for their destined careers as hardy (and largely brainless) menial workers if they are of the *Epsilon* Group, as slightly more intelligent persons if they are *Deltas* or *Gammas*, who look after machines, and as persons capable of exercising a certain amount of independent thought if they are to be *Betas* or *Alphas*. (Alpha, Beta, Gamma, Delta, Epsilon are the first five letters of the Greek alphabet.) Those who are to work in the tropics are specially conditioned to endure and to prefer a hot climate, and so on. The idea is that science has enabled man to control heredity so completely that the Government can produce just the kind of human beings needed for the work of the World-State. How it conditions their minds also is shown in this extract.

line 9. *Neo-Pavlovian*: Pavlov was a great Russian biologist whose experiments suggested the idea that human behaviour might be governed by exciting or inhibiting the nervous centres artificially. In this novel our author supposes that this idea has been carried out completely by the scientists of the time. (Neo = new.)

p. 155, line 4. *viscose-linen*: linen made artificially from cellulose (wood-pulp), as artificial silk is now made.

line 15. *nursery quartos*: books with large pages and brightly coloured pictures, suitable for little children.

lines 19-20. *dumb-waiter*: a trolley with three or four shelves, for carrying things from place to place. Such

trolleys with rubber-covered wheels are often used to bring food into a dining-room; hence 'dumb waiter', as it takes the place of a human waiter.

lines 21-2. *a Bokanovsky Group*: in an earlier chapter the author has explained how large numbers of children, all exactly alike, were produced by making a single ovum subdivide under artificial stimulus, an invention of an imaginary scientist called Bokanovsky. Such production of uniform human beings was very convenient for the Government, which did not encourage individual differences.

line 23. *dressed in khaki*: each of the five groups had to dress in a prescribed colour.

p. 157, lines 15-16. *compromisingly linked*: the principle underlying this kind of conditioning is that of *association of ideas.* Because the children received unpleasant shocks when they tried to reach the books and flowers, they would always associate books and flowers with something unpleasant, and would avoid them. As these children were to be of the Delta caste, it was desired that they should not want to be educated or cultured.

p. 158, line 14 ff. *to consume transport . . . and manufactured articles*: this is a satire on our modern passion for production. In order to keep up the level of production, so that our factories may not be idle, we have to stimulate men's desire for more material objects. In our times this is done by advertising. Thus, the simple villager is induced to take tea, or to buy factory-made articles in place of village-made goods. In a world where all production is imagined as being under State control, advertisement would be unnecessary, but conditioning would take its place, for the Government would condition the citizens to want whatever it found most convenient for them to consume.

p. 158, line 33—p. 159, line 1. *country sports . . . elaborate apparatus*: we are fast going in that direction, since most modern sports require factory-produced apparatus (bats, balls, nets, etc.).

p. 159, lines 6-7. *Our Ford*: this is a tilt at the mechanized civilization towards which we are developing. The God of *Brave New World* is 'Our Ford' (Ford being the

famous manufacturer of mass-produced motor-cars). Instead of the years being reckoned as 'in the year of our Lord', Huxley represents the citizens of the 'brave new world' as reckoning, their dates from 'the year of our Ford's first T-model' (1909).

lines 14-22. *parent . . . viviparous*: in a civilization in which children are imagined as being artificially produced, it is humorously supposed that the idea of parentage of the present normal kind (viviparous = bringing forth fully-formed living offspring) would be regarded as indecent, and not to be mentioned openly. The words 'mother' and 'father' are therefore quite shocking to these young students, and when the D.H.C. mentions them, the students feel uncomfortable!

p. 160, lines 19-21. *that curious old writer . . . his own genius*: a hit at Bernard Shaw, who has no false shame regarding the fact of his own brilliance.

p. 161. line 2. *a sign of the 'T'*: as the Roman Catholics make the sign of the cross on their breasts as a mark of reverence to God, so the people of this era are depicted as making the sign of 'T' on their stomachs, as a mark of reverent remembrance of their God—Ford!

line 11. *A small boy asleep*: this passage is in brackets as it is a parenthesis describing how Tommy's conditioning affected only his power of mechanical memorizing, not his power of reasoning.

p. 162, lines 14-15. *moral education . . . rational*: a satire on certain forms of moral training in which children are taught to do 'right' as a matter of routine and not because they understand the meaning of 'right' or have any convictions on the subject. An example is given in the next paragraph where the students are silent on hearing the command for 'silence'; they obey mechanically, not because they see that it is a reasonable demand.

p. 163. lines 9-10. *a whisper under every pillow*: each cot was fitted with a radio-receiver just loud enough for the children to hear without being awakened.

line 25. *the voice*: the children were being conditioned to prefer the environment of their own Beta caste.

p. 164, line 18. *Straight from the horse's mouth*: direct from an authoritative source.

line 27. *one scarlet blob*: if such conditioning were possible (and totalitarian states are experimenting with something very much like it), the development of human intelligence and creative ability might be completely checked, for we should all become docile creatures with individual colouring only to the extent permitted and prescribed by the governing authorities.

EVERYDAY LIFE IN 1960

p. 166, line 17. *carbohydrates, proteins*: i.e. free food.

lines 24-5. *farmers are praying for bad weather*: where prices depend upon scarcity, an over-abundant harvest means that prices are so low as to make it not worth while to produce. In America before the present war, wheat and fruit were thrown to the pigs in order to keep prices high, and coffee was burned as fuel.

p. 167, lines 8-9. *One community . . . the game is up*: in the Soviet Union the experiment is being made of organizing production for public use, not for private profit. Our author believes that this will prove so much more effective economically, that other systems will have to be modified.

lines 13-14. *comparatively little work to do*: because modern science is making production so much greater and easier that it will be possible to do all essential work in a few hours per day.

p. 168, lines 8-11. *the artist . . . alone will be paid*: people who do not do some creative work that benefits society will get all they need for living in comfort, but not more.

lines 21-2. *mankind starvingly wrestling . . . nature*: this description was true of most countries until fifty years ago, and it is still true of those parts of the world where improved scientific methods have not yet been introduced, e.g. the greater part of India and China. How is it to be changed ?

p. 169, line 15. *the State become super-biologist*: i.e.

Government control over production, including the production of new human beings.

p. 169, line 29—p. 170, line 1. *licensed banditry . . . jungle law*: this is an aggressive way of referring to the present economic system, under which capitalist Governments uphold the right of wealthy business men to exploit their fellow men in order to get more wealth for themselves. This is what often happens when Governments grant 'concessions' to companies or trusts. (The business men on their side argue that if they did not develop new industries, there would be no commercial improvement; and that if the Government undertook it, it would be wastefully done.)

p. 170, lines 14-15. *society will be the gardener*: but unless the gardener is under public control, mankind will be subjected to such pruning and sorting as is suggested in *Brave New World*. Hence the need for preserving democratic control.

p. 171, line 3. *a non-Aryan grandmother*: see 'Racialism and Science' in the Science section of this book.

line 5. *the Sermon on the Mount*: it is a criminal offence to attempt to persuade soldiers to disobey orders. Christ said: 'Resist not evil; whosoever shall smite thee on thy right cheek, turn to him the other also.' Therefore it is a crime to preach this doctrine of Christ to soldiers, because they must fight if ordered to do so. Quakers (also called 'Friends') endeavour to follow Christ's teaching exactly, and therefore they are pacifists.

lines 7-8. *acts considered virtues by . . . Commerce*: exploitation for private profit is considered quite legitimate in capitalist countries: in the U. S. S. R. it is a criminal offence.

lines 9-10. *monks in . . . Spain*: in these Catholic countries the education of children used to be largely in the hands of the Church. After the Mexican and Spanish revolutions education was undertaken entirely by the State and it became illegal for any other organization to impart it. The defeat of the Republicans in Spain in the Civil War of 1936-9 made this statement no longer applica-

ble to Spain, as General Franco's Government is strongly pro-Catholic.

lines 13-14. *small-town fathers . . . bankers*: till a few years ago, banking used to be subject to very little control in the U. S. A., with the result that there were many bogus banks in which people lost their money.

lines 17-18. *drug traffic . . . carrier pigeon*: some American crooks managed to carry on profitable business even after being put in jail, by concealing consignments of prohibited drugs in little packets carried by tamed pigeons.

p. 172, line 6. *the Platonist*: in the philosophy of Plato it is conceived that universal 'ideas' of perfection exist, of which the expressions in the human world are faint images.

lines 16-19. *Society evolving . . . humanity*: what is regarded as a crime in one age is not necessarily so regarded in another, i.e. the standards of good and evil change according to the state of society.

p. 173, line 2. *Mr Keynes*: the economist.

lines 24-5. *too early flowering of individualism*: freedom to do as one pleases can be safely allowed when the individual does not find satisfaction in doing things that are harmful to society. Before that stage is reached, there has to be restriction of individual freedom, for the sake of the community.

p. 174, line 19. *the New Deal*: the economic reforms instituted by the Government of President Franklin Roosevelt.

lines 21-2. *chartered brigandage*: see note on p. 169, line 29—p. 170, line 1 above.

p. 175, line 26. *True freedom*: think carefully over the definition here given, and see whether it is adequate, in your opinion.

p. 176, lines 8-9. *capitalism . . . unpopular*: artists usually have to struggle for existence, until they become famous.

line 24. *society ultimately exists . . .*: consider this statement carefully, and see whether you agree with it.

p. 176, line 32—p. 177, line 1. *religion . . . a clever con-*

spiracy: this refers to the Marxist saying: 'Religion is the opiate of the people'.

p. 177, lines 27-34. *For a man to do without religion . . .*: as it is impossible for all these conditions to be fulfilled, especially those last mentioned, the conclusion is that everyone must have a religion of some kind or other.

p. 178, lines 12-13. *debilitating . . . paths*: such as the trend of many of the cinema-films of today.

lines 19-20. *religion is nothing but . . . persons*: here is another statement that is useful if it makes you think over the subject. Try to consider it without prejudice. Is religion something more than this? If so, what more? Be sure that your definition of 'more' does not fall within the scope of the statement.

lines 25-7. *when religion began . . . universality*: another statement very provocative of thought.

p. 179, lines 10-11. *the only really religious crowds*: possibly Mr. Langdon-Davies has not visited India. What he means is that fascists and communists are in many instances really sincere in their beliefs, whereas a large majority of people who call themselves 'religious' are simply conventional. This is not a justification of fascism and communism, nor is it a condemnation of real religion.

lines 22-3. *the impending dark ages*: Mr Langdon-Davies wrote this in 1936; he then took part in the Spanish Civil War, on the republican side. But in spite of the fearful times mankind is passing through, our 'dark ages' are not likely to be so prolonged as those which followed the invasion of the Roman Empire by the German barbarians in the third, fourth and fifth centuries A.D., because in our time knowledge is so much more widespread, and to extinguish 'the lighted torch' is therefore much more difficult than it was in those days.

KEY-QUESTIONS AND EXERCISES

THOSE who find the 'key-question' method helpful are advised to write the questions in the gaps left in the text at the beginning of each paragraph of the text to which the

question relates. By keeping the key-question in mind when reading the paragraph, and trying to find the answer to it in the paragraph, the central idea contained in the paragraph will become clear. In other words, the *key* to each paragraph is the answer to the key-question.

For those who follow other methods of study, the key-questions will be found valuable for purposes of revision, and for self-testing. A student who can answer all the key-questions here given may feel confident that he has a good general understanding of the text. The Notes will help him to obtain a more detailed grasp of difficult passages and references. The General Questions at the end will serve as exercises.

Tom Brown at School

1. What did Tom see on first arriving at Rugby, and whom did he meet ?
2. How was Rugby football played in those days ?
3. How did Tom fare in his first experience of being tossed in a blanket ?
4. How did Tom get on during his first term ?
5. What caused Tom's set-back in his next half-year, and how did the Doctor pull him round ?
6. What did Tom learn from his life at school ?

Training for Leadership

1. Why is there a particular need for 'hard thinking' in India at the present time ?
2. What opposing principles are at work in Indian political thought at the present time ?
3. What opposing principles are at work in Indian social development at the present time ?
4. What is the special function of Universities in such times of perplexity and struggle ?
5. What is true culture, and how does University life help one to achieve it ?
6. What are the essential qualities for leadership in this age of transition ? Why are these necessary in particular ?

The Wonders of Egypt

1. How did the Egyptian king attempt to discover which was the most primitive race ?
2. What three alternative explanations of the rise of the Nile waters were offered by the Greeks ?
3. What is Herodotus' own explanation of it ?
4. What are the peculiarities of the crocodile, according to Herodotus ?

Modern Scientific Discoveries

1. Why does science try to 'go to the farthest limits' ?
2. What is the peculiarity of 'going to the farthest limit' of coldness ?
3. What is 'dry ice' and for what is it used ?
4. What remarkable thing happens when a metal is cooled to a temperature just above absolute zero ?
5. What developments may follow from these discoveries ?
6. What use is made of helium ?
7. How has science helped the farmer ?
8. Why is young dried grass better for cattle than oil-cake ?

The Last Days of Pompeii

1. What were the special features of the Roman amphitheatre ?
2. What sorts of contests took place in the amphitheatre ?
3. What was the character and the result of the first contest ?
4. What was the character of the next contests ?
5. What happened when Glaucus was sent in to face the lion ?
6. How did Arbaces escape from one fate and meet with another ?

Run Out

1. What was the situation of the match soon after lunch-time ?
2. How and why did Johnny meet his fate ?

3. What happened up to the time of the Admiral's going in to bat ?
4. How did the great problem 'Who was run out ?' arise ?
5. How was the problem settled, and what was the result ?

NATIONALITY AND DEMOCRACY

1. What various causes have tended to create the feeling of nationality ?
2. Why are democratic institutions almost impossible in a country whose inhabitants do not feel themselves to be of one and the same nationality ?
3. In what circumstances are governments inclined to favour the strengthening of feelings of united nationality and in what circumstances are they inclined not to favour it ? Give examples.
4. What conditions favour the admixture of nationalities, and what are the obstacles to such admixtures ?
5. What happens when two rival nationalities under one government are nearly equal in strength ? How can such difficulties be overcome ?

RACIALISM AND SCIENCE

1. In what different senses is the word 'race' employed ?
2. How is it proved by science that there now exist no pure-blooded survivors of the so-called 'primary races' ?
3. How does science disprove the idea that race can be indicated by the family tree, by language or by culture ?
4. How does science disprove the idea that a nationality and a race are the same thing ?
5. What is the 'Nordic myth' and how is it disproved by science ?
6. In what circumstances are ethnic mixtures disadvantageous to the community ?

THE BATTLE OF MARATHON

1. What circumstances caused the Persian campaign against the Athenians to be undertaken ?

2. What happened from the beginning of the campaign up to the time of the Persian landing on the Greek coast ?
3. What considerations decided Miltiades to attack the Persians ?
4. How were the opposing armies arrayed for battle ?
5. What happened in the battle ?
6. What were the results of the Battle of Marathon ?

THE BATTLE OF BRITAIN

1. In what ways was the Battle of Britain different from any other battle ever fought in the history of mankind ?
2. What was the German plan of campaign ?
3. What change of tactics was made in the second stage of the battle ?
4. Why was London so savagely attacked and what happened ?
5. What happened in the final stage ?
6. In what ways is this battle comparable to other decisive battles of the world such as Marathon, Trafalgar and the Marne ?

BRAVE NEW WORLD

1. How were the children conditioned to dislike books and flowers ?
2. Why were the children so conditioned ?
3. How was hypnopædia used ?

EVERYDAY LIFE IN 1960

1. What factors make it highly probable that all the necessities of life will be very easily available to everyone by 1960 ?
2. Why is the conception of right and wrong likely to be quite different in 1960 from that of 1900 or 1940 ?
3. In what way will the freedom of the individual be of a different kind in 1960 from the kind we have now ?
4. What is true freedom, and in what ways is it likely to be enjoyed in 1960 ?
5. What is religion, and why is it necessary ?

GENERAL QUESTIONS AND SUBJECTS FOR DEBATE

a. How can suitable persons be selected and trained for leadership ?

b. Which form of education is likely to fit a person best for leadership, (*i*) boarding-school education, (*ii*) day-school education, or (*iii*) education at home ? Give reasons for your answer.

c. Mention some of the good and some of the bad features of English public school life, and say how far you consider the idea underlying the public school can be made use of in India today.

d. Debate the subject : 'Our Indian Universities of today fail to prepare young men for the life that is before them.'

e. The Greeks were in many respects the most remarkable people that the world has yet seen. Discuss this statement.

f. All Science is ultimately of practical value. Discuss this.

g. Debate the subject : 'Science endangers civilization more than it advances it.'

h. 'Modern games, sports and pastimes prove in comparison with those of ancient times that we have progressed culturally.' Debate this subject.

i. If a people's character can be judged to some extent from the sports and pastimes they enjoy, what opinion can be formed regarding the character of (*i*) the Moghuls, (*ii*) the early Aryans, (*iii*) the Buddhists, from this point of view ?

j. Illustrate the saying 'Cricket is a funny game' by some anecdote from your own experience.

k. Debate the subject : 'Cricket is not a suitable game for India.'

l. Write a short humorous story about the upshot of any game other than cricket.

m. Debate the subject : 'The Indian political problem can best be solved by encouraging the division of the country into distinct cultural and national regions.'

n. What conditions in India are in favour of its being considered as the home of a single nation?
o. What harm is caused by pseudo-scientific ideas about race?
p. Debate the subject: 'The more intermarriage is encouraged in India, the sooner will India become a united country.'
q. Compare and contrast the empire of Darius with the empire of Alexander, and assess the effects of their respective conquests upon the subsequent history of mankind.
r. In what ways were Marathon, Trafalgar, the Marne, and the battle of Britain (1940), decisive battles of the world? Can you mention other similar examples?
s. Assess the factors which brought about the Persian defeat at Marathon, and the German defeat in the battle of Britain.
t. 'History never repeats itself.' Discuss this.
u. Why is democratic control desirable, even though totalitarian government may be much more efficient in many ways?
v. Debate the subject: 'It is better to be a free man under an inefficient democracy than the slave of a totalitarian state.'
w. What possibilities for good and evil are latent in the endeavour to condition human beings?
x. Debate the subject: 'Man would enjoy greater freedom than he has at present, if his freedom to exploit his fellow men were taken away.'
y. Debate: 'Religion is the opiate of the people.'
z. Debate: 'If there were no God, men would have to invent one.'